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A Conservation of Resources schema for exploring the influential forces for air-travel stress

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ABSTRACT

Effective air-travel stress management is increasingly crucial in determining tourist satisfaction and travel choices, particularly in a time of intensive fear about virus, terrorism, and plane crashes. However, research about air-travel stress, particularly *what* and *how* various influential forces shape passenger stress levels, is still in its infancy. The current research proposes the adoption of Conservation of Resources (COR) theory as a holistic schema to identify through resource dynamics the potential influential forces for air-travel stress across leisure travel stages. The findings, based on surveying passengers at the gate of multi-country international and domestic airports, demonstrates the capability of COR schema to predict and explain the influences on air-travel stress from an array of personal and situational/trip-specific factors. The theoretical advances from COR-based cross-stage stress analyses, and the guidance for customized airline/airport stress-soothing service strategies are discussed.

1. Introduction

"Businesses are suspending operations and airlines are halting flights […] People across the world have grown anxious about being in crowds or travelling in confined spaces like airplanes" (Holson, 2020).

An era of unprecedented challenges (e.g., the coronavirus outbreak, airplane safety concerns, and terrorism) has caused the travel industry to rely on the growing meaningfulness of travel to survive. Meanwhile, the industry has to deal with the declining tolerance among would-be customers towards travel stress (Villa-Clarke, 2020). Many businesses recognize the importance of facilitating a less stressful travel experience to boost the confidence in travel and regain faith in the industry once the current crisis absconds (Kinsman, 2020; Rabbu, 2020).

Travel stress is defined as "the perceptual, emotional, behavioral, and physical responses made by an individual to the various problems faced during one or more of the phases of travel'' (DeFrank, Konopaske, & Ivancevich, 2000, p. 59). Despite the increasing recognition of its significance, the examination of travel stress in a leisure-travel setting has been largely insufficient and fragmented (Chen, 2017; Zehrer & Crotts, 2012). Exploring the underlying rationale of how forces shape leisure-travel stress is particularly in its infancy (Fennell, 2017). Filling this gap is important for leisure-travel marketing and management theory and practice because assessing the potential influences on leisure-travel stress and developing corresponding strategies to better alleviate the stress can increase tourist loyalty and travel frequency.

This study proposes a schema premised on the Conservation of Resources (COR) theory as a framework to identify potential influences on leisure-travel stress. To the best of our knowledge, this paper is the first to employ the COR to assess travel stress as a dynamic construct fluctuating over different leisure-travel stages. It uses a holistic approach to assess stress at each stage by accounting for the influences from other stages. An adaptation to the COR (specifically in its resource categorization) is also proposed to better fit the examination of short-term stress fluctuation. The anticipated offering is a systematic tool for more accurate leisure-travel stress interpretation and prediction. Specifically, the study demonstrates the COR-premised analyses of leisure-travel stress using a segment of a leisure trip – the air-travel stages (both *departure-flight* and *return-flight*) – as an example.

Recently, the air-travel industry has arguably encountered more challenges than many other tourism sectors. In addition to the health crisis, there are also rising labor costs, trade tensions, airspace restrictions, scrutiny of carriers' environmental footprints, as well as safety concerns due to aircraft accidents and terrorism (Harper, 2020; IATA Communications, 2019). These challenges squeeze profit margins

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resulting in the adoption of aggressive strategies to cut costs and enhance revenues (e.g., reducing leg space and charging for carry-on and checked luggage) (Whitley & Gross, 2019). While for some, air-travel has already been perceived as a stressful, unpleasant, but inevitable stage of leisure travel (McIntosh, Swanson, Power, Raeside, & Dempster, 1998), the aforementioned extra stressors further intensify the stress of the flight. For many travelers, this can compromise leisure-travel benefits for their well-being (Fritz & Sonnentag, 2006; Nawijn, Marchand, Veenhoven, & Vingerhoets, 2010). For the air-travel industry, it can ultimately result in less trust in the air-travel industry as well as reduced travel intentions and loyalty (Batouei, Iranmanesh, Nikbin, & Hyun, 2019; Dwyer, 2019; Lieberman, 2020). Therefore, the purpose of this paper is to unveil the mechanisms of air-travel stress to effectively alleviate it and regain customer confidence (Faraj-Dubz, 2020).

The travel literature has proposed a categorization of leisure-travel stress into three stages: pre-trip stress, travel stress (e.g., air-travel stress), and at-destination stress (Zehrer & Crotts, 2012). While pre-trip and at-destination stresses have been extensively studied (Gao & Kerstetter, 2018; Jonas & Mansfeld, 2017; Nawijn, De Bloom, & Geurts, 2013), the research on air-travel stress have nevertheless been scarce. The limited attempts have been primarily made to examine the potential stressors contributing to air-travel stress (McIntosh, 2006; Beck, Rose, & Merkert, 2017; Batouei et al., 2019). Further, there is little understanding of *why* and *how* people with different personal characteristics and from diverse contexts react to various air-travel stressors. We turn to the COR theory for guidance.

The lens of the COR allows the uncovering of underlying mechanisms of air-travel stress and facilitates the identification of its shaping forces. According to COR, the level of stress people feel is associated with the experienced or anticipated insufficiency/depletion of resources and the resulting lack of resources invested to cope with stress (Kuentzel & Heberlein, 1992; Schneider & Hammitt, 1995). This study thereby assumes that factors influential to such evaluation of existing stress-coping resources (depending on focal and previous travel stages) and future resources (upcoming travel stages) are potential determinants of air-travel stress. Instead of aiming for the most comprehensive set of predictors of air-travel stress, this study focuses on examining specific personal and situational factors related to stress that are theoretically derived from the COR framework and with data readily accessible to the air-travel industry. The latter is responding to the industrial strategic priorities of cost-effectiveness and high efficiency (IATA & SOIF, 2018).

This study empirically tests these identified factors for accuracy and identification consistency across contexts using passenger data collected at different travel stages from two international and two domestic airports located in Brazil and the United States. Such COR-based factor identification and empirical examination legitimizes the use of COR as a systematic and standardized travel-stress analysis approach and a valuable aid for strategic service management and marketing plans for travel-stress alleviation.

The specific research questions explored are as follows:

1 How accurately can the COR-premised schema predict the influences on air-travel stress (i.e., influential factors and patterns of influences) at air-travel stages (both *departure-flight* and *return-flight* stages)?
2 Are the schema predictions consistent across contexts varied by air-travel stressor type?
3 What factors among the easily accessible personal and situational factors influence air-travel stress?

2. Literature review

2.1. Travel stress

According to the model of stress appraisal and response (Schneider & Hammitt, 1995) the stress people feel is essentially a person-environment transaction process. First, both *personal* and *situational* factors determine the individual appraisal of encountered conditions as stressors. This is followed by further appraisals of coping possibilities and eventually coping reactions. Individuals may alleviate the stress by changing their objective situation, their appraisal, or the way they react to the appraisal such as adopting certain coping strategies (Schneider & Hammitt, 1995). When applied to the leisure-travel setting, the situational factors may comprise the features of a specific trip (e.g., destination features and trip length); the personal factors can be an individual's generic features that can influence his/her responses to stressors (e.g., sociodemographic and travel habits) (Nawijn, 2011). Understanding these factors may thus be crucial for determining how travel stress builds up, and accordingly plan for stress alleviation.

The existing literature has examined a variety of stressors associated with leisure trips and the extent of resulting stress states such as fear, anxiety, worry, and anger (Larsen, Brun, & Øgaard, 2009; Ma, Ooi, & Hardy, 2018; Mura, 2010). Specifically, the stressors that most commonly stimulate air-travel stress are: the possible or actual occurrence of adverse events (e.g., delayed/cancelled flights, missing a flight, health and safety concerns, and long waiting periods for taking off), the irritating behaviors of other passengers (e.g., bringing aboard too much luggage, loud talking, crying baby, and demanding special treatment), and the unreliable/uncomfortable services delivered by airlines/airports (e.g., low problem-solving efforts, unclear information, and unpredictable security measures) (Bricker, 2005; McIntosh, 2017).

The investigation into personal and situational factors influencing leisure-travel stress is still in its infancy and has mainly focused on relevant constructs such as *risk* and *fear* rather than stress. A wealth of literature has paid attention to contributors to trip risk perception, an empirically established predictor of travel stress (Lopez-Vazquez & Marvan, 2003). The identified contributing factors contain *personal* features such as sociodemographic background (Floyd & Pennington-Gray, 2004; Tsaur, Tzeng, & Wang, 1997), cultural background (Reisinger & Mavondo, 2007; Vassos, 1997), lifestyle variables (Fuchs & Reichel, 2006; Maser & Klaus, 2008), personality (Lepp & Gibson, 2008), travel experiences/habits (Lepp & Gibson, 2008; Sönmez & Graefe, 1998), as well as *situational* trip-specific factors such as features related to a specific destination (Dey & Sarma, 2010; Fuchs & Reichel, 2010). Although these personal and situational factors influence risk perception, which is a potential predictor of travel stress, previous research has not established a direct relationship between these factors and air-travel stress.

Alternatively, Fennell (2017) provided an overview of factors potentially contributing to *fear,* an affective reaction to some travel stressors and indicates one facet of leisure-travel stress. The proposed factors include personal factors of socio-demographics, health and mental/physical skills, time/financial resources, responsibilities, opportunities, and personality. Further, trip-specific factors of economic costs, social/cultural features, environmental features, travel services, and media information were noted. These factors are nevertheless identified primarily toward the at-destination stage.

Yet, it is important to explore factors that influence stress at other travel stages (i.e., prior-trip, transportation, and after-trip stages) than at the destination. Stress levels of all travel stages matter as they jointly determine the overall trip stress level. Even a single-stage stress examination may not be accurate without considering the potential interdependence of stress levels between travel stages, as implied by the observed stress spillover between work life and leisure travel (Chen, Huang, Gao, & Petrick, 2018), and the extended stress relieving effect from a leisure trip to after-trip daily life (Chen, Petrick, & Shahvali, 2016). Given the between-stage connections, the previously addressed factors influential to at-destination stress indicator of *fear* may also impact stress at other travel stages, but possibly to different extents. For instance, de Bloom, Geurts, and Kompier (2013) demonstrated that travel activities influence mood, tension, and energy level (possible indicators of stress) for the after-trip period more than the during-trip period. It is thereby challenging to hypothesize the extent of effects from those at-destination influential factors on stress levels at other travel stages solely based on the at-destination evidence.

Finally, there is a need for an theoretical framework to explain the shaping forces of travel stress across leisure-travel stages. Kirillova, Lehto, and Cai (2017) proposed a rationale for only one facet of travel stress, anxiety toward losing gained authentic identity after a trip. Chen et al. (2018) adapted the work–family border theory by Clark (2000) to the leisure travel setting. The theory proposes that the poor management of work-travel border is the cause for insufficient work stress alleviation from travel. Yet, the authors focused on work stress alleviation rather than travel-stress build-up. The theory of stress appraisal and response by Schneider and Hammitt (1995) conceptualizes the stress level as determined by a) the primary appraisal judging the stressfulness of a situation, b) a secondary appraisal on what can be done about it, and c) the adopted strategies to cope with the situation. However, by conceptualizing stress as only in the eye of the beholder, it essentially lays the burden of stress coping on travelers who are expected to adopt the appraisal strategies to minimize their felt stress (Hobfoll, Halbesleben, Neveu, & Westman, 2018; Westman, Hobfoll, Chen, Davidson, & Laski, 2004). Also, while it allows the examination of how travelers' personal factors (micro-level) may interact with the environment (i.e., the stressors) in shaping the travel stress, it cannot identify the macro-level (i.e., global/environmental/socio-cultural) and meso-level (i.e., organization/community/group-wise) factors equally influential to travel stress (Korstanje, 2011). Moreover, while most existing stress-related explorations in leisure travel are post hoc in nature by examining perceived travel stress after a stressor occurs, the framework largely limits the industry's ability to forecast and prevent travel stress in reaction to stressors not yet occurred.

To overcome the shortcomings of the aforementioned theories, we introduce the Conservation of Resources theory as a promising overarching framework to detect the influential personal and situational factors to travel stress. The COR allows us to account for (1) diverse contexts and stress types, (2) different levels of stress-shaping factors, as well as (3) interdependence of travel stages. It also enables us to make predictions about possible influences before stressors occur.

So far, the application of the COR theory in tourism research has been scarce. The few existing attempts primarily explored the resource transactions between routine life and leisure travel in its entirety and without consideration of stress fluctuations or resource intricacies (see for example, Chen et al., 2016; Espino, Sundstrom, Frick, Jacobs, & Peters, 2002). Our study extends the previous findings by adapting the COR schema for a micro-level examination of stress at individual travel stages (using departure- and return-flight stages as examples). We also unveil the potential for a COR-based schema as a standardized and systematic framework to predict the underlying mechanisms for potential influences on travel stress of different types and stages.

2.2. Conservation of Resources theory

Conservation of Resources theory developed by Hobfoll (1989) suggests that the conservation of existing and acquisition of new resources is a major motivation for individual decision-making and actions. Depletion or insufficiency of resources, on the contrary, can lead to stress, emotional exhaustion, and destruction of wellbeing. Resources have been loosely defined in the existing literature, as "anything perceived by the individual to help attain his or her goals" (Halbesleben, Neveu, Paustian-Underdahl, & Westman, 2014, p. 1338).

The theory establishes two major principles underlying people's behaviors: 1) *primacy of resource loss*: losses of resources are more harmful than similarly valued gains, hence people may try harder to avoid resource losses than receive gains and 2) *resource investment*: people are willing to invest resources to prevent resource loss, recover from losses, and acquire resources (Hobfoll, 2001). There are also two crucial COR corollaries of *resource gain spirals*-people with more resources or have been gaining resources are more likely to experience resource gains, and *resource loss cycles*-those with insufficient resources or have been experiencing resource losses are more likely to experience further resource losses as they become more defensive in how they invest resources.

Resources were originally categorized into four types: personal (i.e., demographics and personalities), condition (i.e., life statuses/roles), object (i.e., tangibles such as housing/transportation adequacy), and energy (i.e., time/effort). Later this typology was adapted into different versions, such as the isolation of social resources from condition category and the split between physical and psychological resources (Hobfoll, 2001; van Woerkom, Bakker, & Nishii, 2016). It remains an ongoing conversation on how to properly define resources and how the all-inclusive yet abstract categories can be used in practice (Hobfoll et al., 2018). For instance, it is challenging to assess the effect of each resource type on individual stress levels given the high heterogeneity within each type (e.g., energy incorporates mood, physical energy, cognitive energy, time, and so forth). It is also less meaningful to conduct *cross-context* comparisons for resource status/stress-shaping dynamics based on these broad categories.

Additionally, there is the demand for more COR research exploring the impact that resources play in shorter-term settings such as across days/weeks (Hobfoll et al., 2018). This study hence proposes an adapted resource typology with a focus only on the changeable resources in the short-term (i.e., over a leisure trip) as opposed to the unchangeable ones such as objects (e.g., possessions like housing) and conditions (e.g., marriage). The typology with empirically established changeable resources (Kammeyer-Mueller, Simon, & Judge, 2016; Lee & Ok, 2014) is as follows: physical resources (e.g., physical energy, health, budget, and time), affective resources (e.g., positive mood), cognitive resources (e.g., attention and memory), social resources (e.g., social status and support), and dispositional resources that determine the allocation of other resources (*self-oriented*-e.g., autonomy, self-efficacy/control, resilience, self-esteem, optimism, and *social-oriented*-e.g., trust, empathy, and patience).

The proposed focused categorization aims to be more applied as it directs the attention and effort towards the resources that travelers can alter to alleviate stress over the time of a trip. Each category is more homogeneous than categories in the original typology, which enables meaningful comparisons of resource status in each category across contexts. For example, the overall variation of *cognitive* resources across travel stages is much more meaningful than identifying the overall change in the original category of *energy* resources (which involves not only the cognitive ability and effort but also other heterogeneous components such as time and money). In addition, the proposed typology separates the cognitive and affective resources from the original *energy* category to account for the dominance of these resource types in stress buildup. The separation is based on the consideration that a) stress levels are determined by appraisal and reaction through the two completely different channels - cognition and affection, b) many other types of resources may shape stress via these two channels (e.g., knowledge resources reduce stress through less consumption of cognitive load, perceived high social status feeds the positive affection, etc.) (Jen-Hwa Hu, Han-fen, & Xiao, 2017; Tangney, Miller, Flicker, & Barlow, 1996), and c) cognitive and affective resources largely regulate many other resources' values, such as enhanced sensitivity to budget insufficiency under the cognitive overload (Deck & Jahedi, 2015).

Another important observation is that the potential to gain/consume a resource type varies by trip stage, which then leads to a cross-stage fluctuation of resource storage and stress levels. Some resources are of high demand at one stage but less at another stage. For example, consumption of *physical/cognitive* resources is relatively high at the trip preparation stage but can be low or even replenished over a relaxed resort stay. Similarly, if the at-destination stage is filled with adventurous physical activities, travelers are expected to gain more *self-efficacy* resources but expend more physical *energy* resources. (Hobfoll, Stevens, & Zalta, 2015)(p.176) further addressed the variation of context/setting in providing "safety and protection against resource loss". As the air-travel stage is commonly perceived as more-stressful and less-enjoyable than other trip stages, understanding its stress management is important. Effective stress management can potentially bring great improvements to travelers' resource protection/renewal and accordingly reduce their reluctance to travel.

In conclusion, following the COR rationale, this study suggests that resource adequacy (physical/cognitive/affective/social/dispositional) and accordingly the decision to invest/conserve resources at different air-travel stages will impact how travelers cope with stressors and the ultimately felt extent of air-travel stress. As opposed to previous attempts, this approach allows for a more accurate influence identification. It not only captures direct influences of a factor on resource dynamics at the focal stage, but also accounts for spillover effects from resource variations at other stages due to that factor. A visual demonstration of the conceptualization is depicted in Fig. 1.

2.3. Influence identification

The potential influential factors to air-travel stress were selected based on two criteria: 1) established in the literature as influential to constructs related to travel stress (e.g., fear, anxiety, risks, or life stress) yet no direct relationship to travel stress or at least not unanimously agreed upon, and 2) readily accessible to airlines/airports in their passenger database. The pertinent personal factors involve: travel frequency (Larsen, 2007; Lepp & Gibson, 2008), employment and job strains that can be roughly estimated from the occupation type (Chen et al., 2018; Strauss-Blasche, Reithofer, Schobersberger, Ekmekcioglu, & Wolfgang, 2005), age (Fox, Hitchings, Day, & Venn, 2017; Gibson & Yiannakis, 2002), and gender (Gustafson, 2006; Nawijn et al., 2013). The situational factors that meet the criteria contain: trip duration (Chen, Lehto, & Cai, 2011 de Bloom et al., 2010), cultural distance (Bi & Gu, 2019; Ma et al., 2018; Manosuthi, Lee, & Han, 2020) and geographical distance (Nicolau, 2011) of travel destination, previous destination experience (Deng & Ritchie, 2018; Minnaert, 2014), number of travel companions (Dellaert, Ettema, & Lindh, 1998; Yang & Tung, 2018), airport status (i.e., international versus domestic) (Campbell & Vigar-Ellis, 2012; de Barros, Somasundaraswaran, & Wirasinghe, 2007), and location difference (i.e., developing versus developed countries) (Button & Taylor, 2000; Correia & Wirasinghe, 2007). The following sections theorize the selected factors based on the central tenets and adapted resource typology of the COR to identify the existence and patterns of their impacts on air-travel stress. Section 2.3.1 addresses the situational before moving to 2.3.2 for the personal factors.

It should be noted that throughout the various air-travel stages many types of resources may be beneficial in reducing air-travel stress. Examples are physical resources to handle the lengthy flight process, cognitive resources for information verification, affective resources for buffering the negativity from queueing or service problems, social resources for informational/emotional support, and dispositional resources to designate the above resources to be invested in handling various stressors. As there has been a lack of literature indicating the specific types of resources required for coping with each of various air-travel stressor types (e.g., incidents, fellow passengers, or service deliveries), it is presumed that each aforementioned resource type matters to air-travel stress levels.

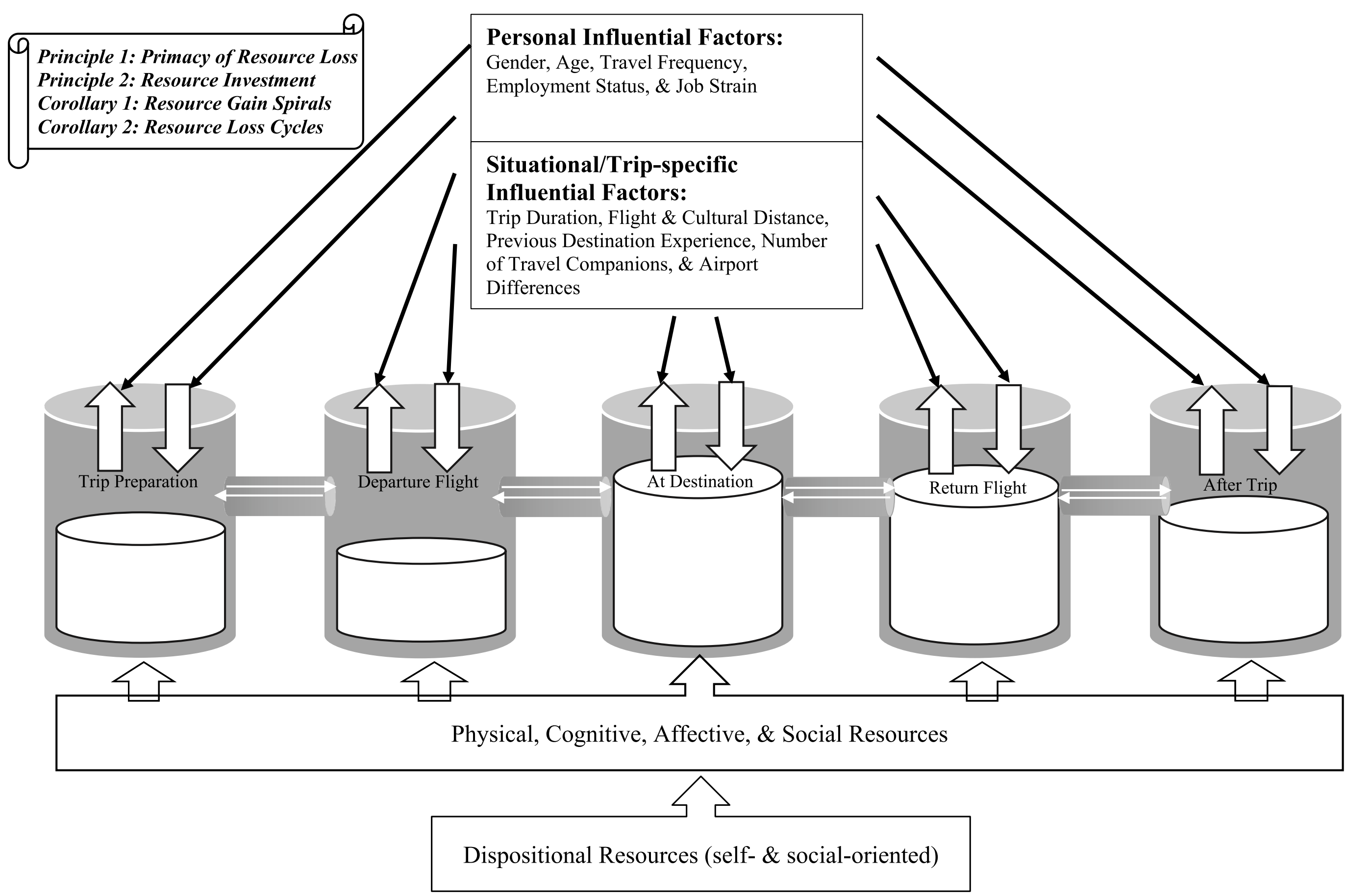

Fig. 1. Illustration of COR-based conceptualization.

2.3.1. COR examination of situational factors

2.3.1.1. Trip duration. Travelers who take shorter leisure trips are more likely to have greater work, family, and life commitment (Nawijn et al., 2010). With an increased trip length, their negative emotions are likely to increase (declining affective resources following the proposed resource typology), such as before-travel guilt about the postponed duties and upon-return worries given the anticipated duty overload (Mitas, Yarnal, Adams, & Ram, 2012; Nawijn & Damen, 2014). It is also common for these travelers to use more physical and cognitive resources for pre-travel planning and preparation given the increased trip length (Nawijn et al., 2013). Furthermore, if the trip length is not sufficiently long to anticipate or experience an adequate gain of physical/cognitive/affective resources to compensate for the experienced or anticipated losses of these resources, the increased trip length will likely increase air-travel stress at the departure/return-flight stage (de Bloom et al., 2010). Based on the COR corollary of resource loss cycles, travelers would conserve rather than invest resources in dealing with air-travel stressors. The conservation is in response to the greater before-trip resource exhaustion with the increasing trip length and insufficient anticipated/actual resource restoration over the still-short trip. Subsequently, the resource loss cycle continues as the conservation of existing resources at air-travel stages (e.g., avoid communication with other passengers) can potentially result in more resource losses, such as anger felt towards other passengers (affective resource loss) and self-loathing due to misunderstandings (dispositional resource of self-esteem loss).

Moreover, travelers more likely gain existential authenticity-the awareness and behavioral alignment with the true self (Schlegel, Hicks, King, & Arndt, 2011)- from much longer trips (Brown, 2013; Kirillova et al., 2017), which fosters the high-level self-oriented dispositional resource of *self-esteem* (Goldman & Kernis, 2002; Heppner et al., 2008). The fostered self-esteem over the trip then motivates the investment of existing resources (e.g., physical/cognitive/affective) at least at the return-flight stage to sustain self-esteem gains, given the COR corollary of resource gain spirals, and the greater priority people designate to dispositional resources in resource investment/conservation decisions (Penney, Hunter, & Perry, 2011). For instance, people would invest *affective* resources in other passengers by showing compassion to others in order to harvest more resources in return (e.g., social support, positive mood, and in particular self-esteem).

To summarize, only when the leisure trip is "long enough" can the increased trip length be associated with increasing gains and diminishing losses of resources. Accordingly, the likelihood of resource investments at air-travel stages increases, resulting in lower air-travel stress. For trips not long enough, an increase in trip length leads to greater resource loss. The loss cannot be adequately recovered, resulting in an increase in air-travel stress. Yet, the threshold for a leisure trip to be defined as "long enough to restore sufficient resources" awaits to be explored. Accordingly, a quadratic relationship is hypothesized between trip duration and air-travel stress, such that within a certain number of travel days, air-travel stress increases over time. Yet after surpassing that duration, stress declines by days (H1a-b).

H1. The air-travel stress levels at the departure-flight(a) and return-flight (b) stages are curvilinearly related with trip duration such that air-travel stress initially increases as trip duration increases; after surpassing a threshold the stress then weakens with the increase in trip duration.

2.3.1.2. Cultural and geographical distance. A culturally more distant destination is likely to consume more physical and cognitive resources at the before-trip stage due to increased uncertainties (e.g., packing more supplies, conducting more research). It is also associated with the anticipated and actual consumption of more of these resources to explore the destination (e.g., more physical energy finding locations, more cognitive processing of novel information). These actual/anticipated resource losses can trigger the resource conservation tendency at the departure-flight stage and accordingly a higher stress level.

On the other hand, experiencing a culturally distant destination may enhance resource replenishment. This may be particularly the case for dispositional resources as the novel culture allows for a better detachment from daily routines and hassles (de Bloom et al., 2010). The detachment offers a greater opportunity to improve self-esteem through gaining existential authenticity (Kirillova et al., 2017), self-efficacy, and cultural intelligence (Frías-Jamilena, Sabiote-Ortiz, Martín-Santana, & Beerli-Palacio, 2018; Hirschorn & Hefferon, 2013). Following the COR principle of resource investment, the resulting sense of dispositional resource sufficiency activates resource investment at the return-flight stage to cultivate further gains of these dispositional resources. This aids coping mechanisms while reduces the air-stress level.

While cultural distance may have a depleting but also enhancing effect based on the air-travel stages, the geographical distance spanned by the travel may one-sidedly impact depletion. As travelers are likely to consume more physical and affective resources in long-haul than short-haul flights due to fatigue (Flower, Irvine, & Folkard, 2003), an increase in geographical distance should increase air-travel stress.

H2a. The air-travel stress level increases with cultural distance between tourist origin and destination at the departure-flight stage.

H2b. The air-travel stress level decreases with cultural distance between tourist origin and destination at the return-flight stage.

H3. The air-travel stress levels at the departure-flight(a) and return-flight (b) stages are higher among travelers travelling in greater flight distance.

2.3.1.3. Previous destination experiences. With more familiarity with a destination, travelers should consume less cognitive resources before and during the trip (Heyman, Van Rensbergen, Storms, Hutchison, & De Deyne, 2015). Guided by the corollary of resource gain spirals, the resulting greater resource sufficiency then motivates the tourist to invest more cognitive resources in the air-travel problem-solving, which contributes to lower air-travel stress levels and potentially more gains of resources (e.g., positive mood).

H4. The air-travel stress levels at the departure-flight(a) and return-flight (b) stages are lower among travelers with more prior visits to a destination.

2.3.1.4. Number of travel companions. Given the COR principle of resource loss dominance, although travelers would gain social resources (i.e., social support) by travelling with a bigger group. They may find the associated variety of resource losses more salient and cannot be adequately compensated by the social resource gains. Accommodating the more diverse or even conflicting needs of a larger travel party in trip planning and onsite decision-making can cause the cognitive and affective resources to deplete (Dellaert et al., 1998). Even the higher-in-hierarchy compositional resources could be exhausted (e.g., empathy) or compromised (e.g., autonomy) (Petrides, Pita, & Kokkinaki, 2007). Travelers travelling with a larger party are, thus, more prone to conserve their resources during air-travel stages and accordingly become more stressed in reaction to any stressors.

H5. The air-travel stress levels at the departure-flight(a) and return-flight (b) stages increase with travel party size.

2.3.1.5. Airport differences. Airport differences, particularly country differences (e.g., in a developing country versus a developed country) and status differences (i.e., international versus domestic airport), can cause variations in the extent of stressors (e.g., crowdedness and flight delay). Consequently, the extent of resource consumption to cope with stressors will likely differ across airports and result in a variation of stress levels.

H6. The air-travel stress levels at the departure-flight(a) and return-flight (b) stages differ by country of airports (i.e., Brazil versus USA airports).

H7. The air-travel stress level at the departure-flight(a) and return-flight (b) stages differ by airport status (i.e., international versus domestic).

2.3.2. COR examination of personal factors

2.3.2.1. Travel frequency. Experienced travelers are not likely to consume many cognitive resources pondering on the uncertainties of upcoming trips. They could even benefit with a sense of self-efficacy gains (self-oriented dispositional resource) from rich travel experiences (Scarinci & Pearce, 2012; Valencia & Crouch, 2008). However, repeated consumption over frequent trips may possibly exhaust the physical resources and social-oriented dispositional resources (e.g., empathy and patience). This results in little additional acquisition or even a reduction of affective resources (e.g., lacking excitement and joy with the declining sense of novelty) (Eden, 1990). With more types of resources exhausted rather than gained, and following the COR principle of resource loss dominance, the more frequent travelers should conserve resources at air-travel stages and consequently experience more air-travel stress.

H8. The air-travel stress levels at the departure-flight(a) and return-flight (b) stages increase with travel frequency.

2.3.2.2. Employment and job strain. Employed travelers may experience a spillover of job strain during a leisure trip because their likelihood to think about or conducting job duties while on the trip (e.g., checking work emails using a mobile phone) (Chen et al., 2018), which occurs more frequently among those with high job strain. This results in their less actual/anticipated resource restorage (e.g., cognitive/affective/-dispositional) over the trip. Travelers with jobs and particularly those with high job strain also feel the need to leave their jobs in good order before travelling, which can consume significant cognitive and affective resources (e.g., feeling guilty or anxious) (DeFrank et al., 2000). The before-trip resource depletion plus insufficient during-trip resource restorage can lead to greater departure-flight stress due to the resource-conservative motivation (principle of resource loss dominance). Upon return, the anticipated increase in resource consumption due to work overload (Mitas et al., 2012; Nawijn & Damen, 2014), in addition to the insufficiently restored resources during the trip, could further accelerate the resource conservation and cause higher-level stress at the return-flight stage.

H9. The air-travel stress levels at the departure-flight(a) and return-flight (b) stages are greater for employed travelers than travelers currently without jobs.

H10. The air-travel stress levels at the departure-flight(a) and return-flight (b) stages are greater for travelers with high job strain than those with lower job strain.

2.3.2.3. Age. Older travelers are more likely to have less physical or cognitive resources at their disposal (Atkinson et al., 2005). Thus, they may direct less of these resources towards handling air-travel stressors, such as the expected lack of cognitive capability for problem-solving and regulating negative emotions in face of adversity. They may more likely suffer from higher air-travel stress levels due to inability/reluctance to invest resources at air-travel stages. For instance, they may have a harder time memorizing boarding information or controlling anger which causes escalated negative emotions.

It is also noteworthy that the older travelers are more prone to gaining existential authenticity from leisure travel (Kirillova et al., 2017), hence the greater likelihood to gain the self-oriented dispositional resource of self-esteem, which can motivate the investment of more physical, cognitive, affective, and social resources for more self-esteem gains and form resource gain spirals. However, as Gnoth and Matteucci (2014) posit, individual sense of existential authenticity can only be provoked when exposed to the more ideal version of self or at least “lifting one’s head from the drudgery of every-day life” (p. 11). Such potential gain of self-esteem may not be anticipated and hence should not influence much the resource employment decisions at the departure-flight stage. Moreover, the gained existential authenticity more likely triggers the older travelers after-trip existential anxiety due to their greater “sensitivity to the incongruence between the newly acquired existential authenticity and everydayness” (Kirillova et al., 2017b, p. 22). Their fear of losing the replenished self-esteem upon return would trigger their inclination of conserving resources rather than investing in stressor coping at the return-flight stage; the COR principle of resource loss dominance. Therefore, we expect higher stress levels for older travelers regardless of air-travel stages or resource types examined.

H11. The air-travel stress levels at the departure-flight(a) and return-flight (b) stages increase with age.

2.3.2.4. Gender. Females spend greater cognitive efforts on travel information searching and planning than males given females’ more exhaustive and elaborative information searching/interpreting patterns (Kim, Lehto, & Morrison, 2007). Also, females are more social-oriented and thus tend to invest greater affective resources than males in providing social support to others (Tsiotsou, Ratten, & Sigala, 2010). This can exacerbate their consumption of other resources, such as cognitive resources, considering that a majority of before-trip planning and during-trip organizing tasks are undertaken by females (Fischlmayr & Kollinger-Santer, 2014). Such before-trip depletion and anticipated during-trip consumption of cognitive and affective resources can lead to a greater likelihood of resource conservation for females than males, thus increasing their stress levels more than males at the departure-flight stage.

During the trip, thanks to the more interdependent construal of self (opposed to the more independent self-construal by males), females can experience a greater improvement of existential authenticity and hence obtain a higher boost to self-esteem (Kirillova et al., 2017). The study also found that females’ gained self-esteem is likely not to completely fade after return to everydayness, as their after-trip existential anxiety attributed to the loss of gained authenticity was not greater than males. Given the disproportional importance of dispositional resources (i.e., self-esteem) replenished at the destination, despite the females’ consumed greater extent of cognitive/affective resources to males also at the destination, they should still have a better chance of experiencing lower return-flight stress levels than males. This is likely due to the multi-resource investment in air-stressor coping motivated by sustaining the self-esteem growth, following the COR corollary of resource gain spiral.

H12a. The air-travel stress level at the departure-flight stage is greater for females than males.

H12b. The air-travel stress level at the return-flight stage is lower for females than males.

3. Methodology

3.1. Samples

Data was collected at airports in the USA and Brazil, with one international and one domestic airport selected for each country. Only participants on international flights were recruited from the gate hold area in the International Terminal E at Atlanta’s Hartsfield-Jackson

International Airport (ATL) and the International Terminal of Guarulhos International Airport in São Paulo, Brazil (GRU). Both airports were chosen given their well-known high passenger volume, with ATL the busiest in North America and GRU the busiest in South America (Zhang, 2016). Participants for the domestic flights were recruited in the United States from Columbia Metropolitan Airport (CAE) and in Brazil from Belo Horizonte (CNF). At different times during each day over two weeks, the participants were approached while sitting at the departure gate and asked to participate in a 15-min survey focusing on travel. Travelers appearing under the age of 21 were not approached. The survey collection at the gate not only ensured a high response rate because passengers were not in a rush but also provided a unique setting as travelers were experiencing the travel stress rather than having to recall or anticipate it. Travelers that indicated their purpose of the trip as primarily business were excluded from the dataset in our study. For airports in Brazil, participants had the option of completing the survey in English or Portuguese, which was back-translated by licensed translators.

The useable sample size is 1092 in total, with 28% (305) collected from ATL, 46% (497) from GRU, 5% (55) from CAE, and 22% (235) from CNF, hence around 73% are international travelers and 27% are domestic travelers. Moreover, 59% of the respondents were departing for the vacation destination, while 41% were returning home. 2% of respondents who travelled for longer than 90 days were removed from further data analyses as outliers, following a common practice in tourism studies (Alegre & Pou, 2006; Kang, Lee, Kim, & Park, 2018). The additional respondent information (e.g., demographics and travel features) can be found in Appendix I.

3.2. Measures

To examine the reliability of COR in explaining the air-travel stress mechanisms despite stressor types, **air-travel stress** was measured using a six-point Likert scale (0 = completely disagree and 5 = completely agree) developed by Bricker (2005), with three dimensions representing stress reactions to three types of stressors. The three dimensions are *anxiety about irregular adverse events* (8 items, e.g., "My body feels tense if my flight is delayed"), *anger with other passengers* (6 items, e.g., "I would feel resentful if I had to sit near loud/talkative passengers"), and *mistrust in regular airline/airport service deliveries* (8 items, e.g., "I sometimes think airline/airport personnel are unfriendly or unhelpful"). The reliability for each dimension is satisfactory, with the Cronbach's alpha value of 0.74 for stress toward irregular adverse event, 0.74 for stress toward fellow passengers, and 0.85 for stress toward regular airline/airport service deliveries, all exceeding the commonly accepted criteria of 0.7 (Nunnally & Bernstein, 1994). The average of item scores in each dimension was then denoted as the stress measure corresponding to that dimension.

For the measures of **situational/trip-specific factors**, *geographical distance* is measured using the proxy of flying distance between the airport and travel destination, using an online distance calculator (https://www.distancefromto.net). If a country rather than city is provided as the travel destination, then the flying distance between the surveyed airport and the most populous region of that country is calculated. *Cultural distance* between the tourist origin and the destination was calculated with the most widely adopted approach by Kogut and Singh (1988), which calculates a simple standardized quantitative measure of cultural distance between regions based on key cultural dimensions. In this study, eight cultural dimensions established by Torbiörn (1982) to conceptualize cultural novelty has been adopted for calculating the Kogut and Singh index, such as dimension of "everyday customs that must be followed" and "available quality and types of foods". The index values for eight dimensions were then averaged to obtain the cultural distance measure. Existing empirical studies have also documented the Kogut and Singh index calculated between global major regions, which renders this index readily accessible for airlines/airports to easily integrate into their databases. The remaining situational/trip-specific factors are measured using single questions. *Trip duration* is measured by inquiring how many days a tourist have spent or will spend on this trip; to measure *previous destination experiences*, participants were asked how many times they have been to the destination before; they were also asked about the *number of companions* they travel with on this trip; at last, they were also inquired about whether they were on the way home or just about to depart for the trip to identify the current *air-travel stage*.

The **personal factors** are generally measured with single questions, such as *gender, age, employment status* (dummy variable, based on that only currently employed travelers were asked to fill out the job strain scale while others left it blank), and *travel frequency* (indicated by the number of trips taken in the past year). The only exception is *job strain* that was measured using a six-point Likert scale developed by Warr (1990) (0 = never, 5 = all of the time). It assesses two dimensions, including the extent to which travelers felt depressed (gloomy, miserable) and anxious (tense, worried) while working in their job. The average of six item score was treated as the job strain measure (Cronbach's alpha = .89).

3.3. Data analyses

Hierarchical polynomial regression was adopted to test the hypotheses and empirically examine the proposed influences on air-travel stress. Based on the rule of thumb of 10 participants per independent variable (Hair, Black, Babin, & Anderson, 2014), the minimum sample size for the analyses is met by even the smallest sub-group for the regression analysis (currently employed sub-sample at the return-flight stage (N = 340)).

In Step 1, the personal factors were entered into the regression model predicting air-travel stress. Step 2, the situational/trip-specific factors were entered, including the linear term of trip duration. Step 3 included the quadratic term of trip duration in the model, to represent the hypothesized curvilinear effect. The statistical significance for the quadratic term as well as a negative quadratic term indicating the inverted U-shape relationship provide support for H1a-b; the statistical significances for all other personal and situational factors are also expected to support the other hypotheses. The inflection point that indicates the trip duration bringing about the highest-level air-travel stress is also calculated following Weisberg (2005). To avoid the problem of multicollinearity, the standardized values of independent variables were used in each regression model (Aiken, West, & Reno, 1991). The normality, homoscedasticity, and multicollinearity assumptions were checked. Only the skewed IV measures (*travel frequency, destination experience,* and *companion number)* had to be logarithmic transformed (see original distributional statistics in Appendix I).

With some participants on their way to the destination, and others on the way back home, the represented trip stages by these two samples thus vary and represent the *departure-flight* versus *return-flight* stage. Given the hypothesized between-stage differences in the stress influence mechanisms, analyses were conducted separately for each stage (Research Q1).

The hypothesized influences drawn from the COR schema have been judged based on the generic concept of air-travel stress, given the absence of literature supporting resource dynamics shaping stress toward any specific air stressors. Research Q2 further examines whether these assumed influences remain consistent regardless of the context of stressor type triggering the stress. The influential factors (Research Q3) and the mechanisms across contexts are accordingly identified. The explored contexts are three types of stress corresponding to three stressor types (adverse unusual events, unpleasant behaviors of other passengers, failed regular airline/airport services). Each stress type is regressed on all theoretically identified personal and situational factors, with findings compared between stress types for consistency. Moreover, to capture the potential influence from job strain without compromising the statistical power estimating other factors, the models were conducted twice-among all travelers and among travelers with employment only that involves job strain measure. Appendix II presents the correlations between the variables.

3.4. Results

The results for the hierarchical polynomial regressions are listed in Tables 1–3, corresponding to the three air-travel stress dimensions. Additionally, we conducted the bootstrapping procedure (2000 samples) and examined the 95% confidence interval for each effect (Online Appendix A-C) to enhance the rigor of influence identification from using significance level alone (Gelman & Stern, 2006). Only the effects which are significant and with confidence intervals not containing zero are interpreted. The quadratic effect of *trip duration* in Step 3 for predicting the air-travel stress triggered by irregular adverse events (SAE; e.g., flight delay/cancellation, baggage loss/damage, miss/late for a flight) at the *return-flight* stage was statistically significant, for the entire samples ($\beta = -0.0003$, $p < .01$) and employed samples alike ($\beta = -0.0002$, $p < .05$), supporting H1b only. The negative sign of the quadratic effects supports the inverted U-shape relationship between trip duration and return-flight stress. The inflection point is calculated as 11.75, indicating that as long as the trip duration is shorter than 12 days, the longer the trip is, the more SAE a tourist feels upon return; yet once their trip exceeds 12 days in length, the longer they travelled, the significantly less SAE presents (Fig. 2). The inverted-U-shape relationship between trip duration and stress toward other passengers (SOP)

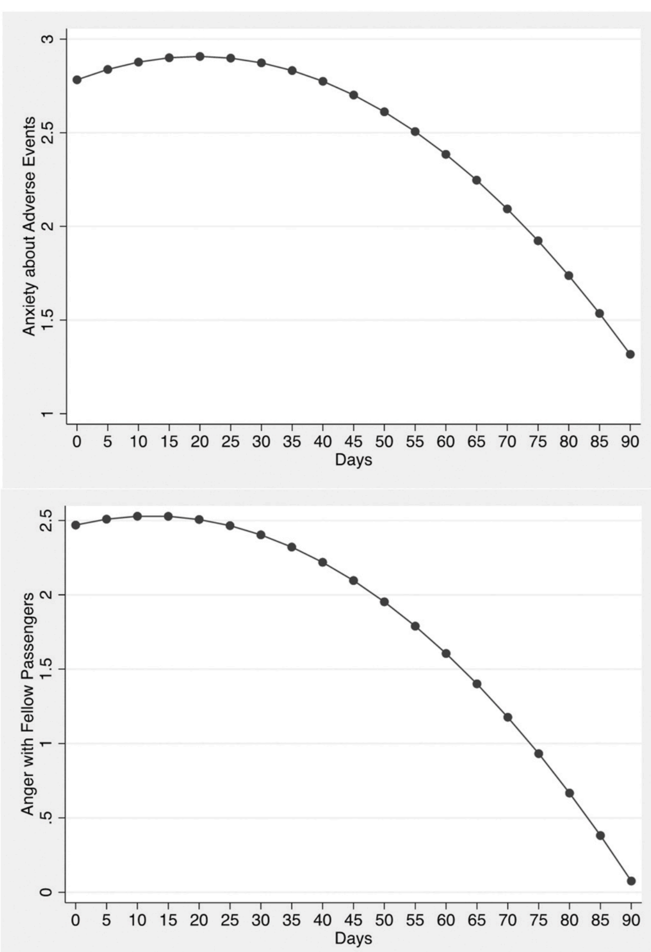

Fig. 2. Quadratic Relationship between Trip Duration and Air-travel Stress Dimensions (for all samples).

(Table 2) nevertheless presents at the *departure-flight* stage (all: $\beta = -0.0004$, $p < .001$),[1] supporting H1a. The calculated inflection point of 20.5 further suggests that when a leisure trip lasts for 20 days or less, the longer the anticipated trip leads to a more intensive SOP; however, when the trip stretches beyond 21 days, the longer length is associated with a lower SOP (Fig. 2). Interestingly, the stress about the regular airline/airport service delivery (SAS) (Table 3), only shows a linear relationship with trip duration at the *return-flight* stage; namely, the longer the experienced trip, the less SAS felt by travelers (all: $\beta = -.01$, $p < .05$)[1]. Hence, H1a-b can only be conditionally accepted, depending on stressor types.

Cultural distance does not have any statistically significant effects on any stress types ($p > .1$) (H2a-b rejected). *Geographical distance* only shows limited effects on SAE at the *return-flight* stage (employed: $\beta = 0.00003$, $p < .05$)[2] (Table 1). The statistically significant effects are nevertheless shown for SOP at both stages (departure-employed: $\beta = 0.00003$, $p < .05$; return-all: $\beta = 0.00004$, $p < .01$; return-employed: $\beta = 0.00005$, $p < .001$) (Table 2); none are found for SAS though ($p > .1$) (Table 3). H3a-b are fully supported for SOP, partially supported for SAE, and not supported for SAS.

Prior destination experience only has statistically significant effects on SOP (Table 2), and only at the *departure-flight* stage. The more times travelers have travelled to the same destination, the angrier they feel about fellow passengers (all: $\beta = 0.13$, $p < .05$). The identified valence of effects is also opposite to the hypotheses. H4a-b are rejected.

The increased *number of travel companions* only exacerbates SOP (all: $\beta = 0.14$, $p < .05$) at the *return-flight* stage and does not influence any stress types at *departure-stage* (partially supports H5b and rejects H5a) (Table 2).

Airport differences, in terms of *airport status* and *country of airport*, indeed appear as influencing air-stress levels. While *airport status* is not influential, *country of airport* is an important predictor of all stress types. Specifically, travelers at Brazilian airports as compared to those at American airports showed higher-level SAE (at the *return-flight* stage) (all: $\beta = 0.22$, $p < .05$)(Table 1), higher-level SOP (at *departure-* and *return-flight* stages) (departure-employed: $\beta = .32$, $p < .01$; return-all: $\beta = 0.34$, $p < .01$; return-employed: $\beta = 0.25$, $p < .05$) (Table 2), and higher-level SAS (*departure-flight* stage) (all: $\beta = 0.44$, $p < .05$; employed: $\beta = 0.28$, $p < .001$) (Table 3). The conditional support of H6a-b by stressors is found, while H7a-b are rejected.

For personal factors, *travel frequency* reduces SAE at the *departure-flight* stage (all: $\beta = -0.01$, $p < .05$) (Table 1), increases SAS at the *return-flight* stage (all: $\beta = 0.04$, $p < .001$; employed: $\beta = 0.04$, $p < .001$) (Table 2), and increases SOP only at the *departure-flight* stage (departure-employed: $\beta = .01$, $p < .05$)(Table 3). Given the variation of effect valence between stressors, H8a-b are conditionally accepted.

Employment status only increases SAS (departure: $\beta = 0.28$, $p < .05$; return: $\beta = 0.26$, $p < .05$)(Table 3), while *job strain* is a more salient contributor to SAE (departure: $\beta = 0.13$, $p < .01$; return: $\beta = 0.26$, $p < .001$) (Table 1), SOP (departure: $\beta = 0.2$, $p < .001$; return: $\beta = 0.22$, $p < .001$) (Table 2), and SAS (departure: $\beta = 0.09$, $p < .05$; return: $\beta = 0.16$, $p < .01$) (Table 3) all together. Hence, H9a-b are conditionally accepted,

[1] The effect is found as insignificant among the employed tourist samples. The potential reasons could be but not limited to: a) the introduced covariate of job strains serve as a moderator, b) job strains cast a stronger main effect on the DV than this examined IV, or c) the smaller sample size for employed-only analyses. It needs additional studies to confirm the cause in the future. Hence no firm acceptance/rejection of the corresponding hypothesis among employed-only samples can be drawn.

[2] Here the statistical significance is only found among the employed population, possibly because of a potential negative confounding effect by job strain. People taking more distant leisure trips are also likely those with less job strain and thus less spillover stress from work to vacation. Therefore, the effect from flight distance could appear after controlling for the ameliorating job-strain effect.

Table 1
The influences of personal/situational factors on air-travel stress toward adverse event.

Predictor	Stress about Adverse Events (SAE)							
	Departure (N = 505)		Departure (N = 412) (Employed only; with Job Pressure)		Return (N = 410)		Return (N = 340) (Employed only; with Job Pressure)	
	β(SE)	R^2 (ΔR^2)	β(SE)	R^2 (ΔR^2)	β(SE)	R^2 (ΔR^2)	β(SE)	R^2 (ΔR^2)
Step 1: Personal Factors								
Age	-.01**(.003)	.042 (.042)	-.01***(.003)	.062(.062)	.005(.004)	.011(.011)	.01(.004)	.085(.085)
Gender	-.1(.09)		.03(.09)		-.1(.1)		-.19(.1)	
Employment	.04(.12)				.06(.14)			
Travel Freq.	-.01*(.004)		-.01(.003)		.005(.01)		.002(.01)	
Job Strain			.13**(.04)				.26***(.06)	
Constant	2.65***(.12)				2.71***(.13)		2.82***(.08)	
Step 2: Trip Factors (with linear term of trip duration)								
Age	-.01**(.003)	.056(.014)	-.01**(.003)	.068(.006)	.01(.004)	.045(.034)	.01*(.004)	.13(.045)
Gender	-.06(.1)		.04(.09)		-.11(.1)		-.21*(.11)	
Employment	.03(.12)				.04(.14)			
Travel Freq.	-.01(.004)		-.01(.004)		.003(.01)		.002(.01)	
Job Strain			.13**(.04)				.25***(.06)	
Flight Dist.	.00003(.00002)		.00001(.00001)		.00002(.00001)		.00003*(.00001)	
Cultural Dist.	.02(.07)		-.05(.06)		.05(.07)		.12(.08)	
Destination Exp.	-.003(.06)		.01(.06)		.04(.08)		-.01(.09)	
Companion Num	-.03(.06)		-.01(.06)		.1(.07)		.06(.07)	
Country of Airport	.13(.22)		.05(.09)		.22*(.11)		.01(.11)	
Airport Status	.04(.1)		.03(.09)		.09(.11)		.18(.11)	
Trip Duration	.004(.004)		-.002(.004)		-.002(.003)		-.001(.003)	
Constant	2.59***(.13)		2.56***(.08)		2.76***(.16)		2.7***(.12)	
Step 3: Trip Factors (with quadratic term of trip duration)								
Age	-.01**(.003)	.057(.001)	-.01**(.003)	.068(.000)	.005(.004)	.068(.023)	.01*(.004)	.143(.013)
Gender	-.06(.1)		.04(.09)		-.09(.1)		-.2(.11)	
Employment	.03(.12)				.02(.14)			
Travel Freq.	-.01(.004)		-.01(.004)		.003(.01)		.003(.01)	
Job Strain			.13**(.04)				.25***(.06)	
Flight Dist.	.00003(.00002)		.00001(.00001)		.00002(.00001)		.00003*(.00001)	
Cultural Dist.	.02(.07)		-.05(.06)		.04(.07)		.11(.08)	
Destination Exp.	.003(.06)		.01(.06)		.05(.08)		-.002(.09)	
Companion Num	-.03(.06)		-.01(.06)		.09(.07)		.06(.07)	
Country of Airport	.13(.22)		.05(.09)		.17(.11)		-.02(.11)	
Airport Status	.04(.1)		.03(.09)		.07(.11)		.17(.11)	
Trip Duration	.003(.01)		-.002(.006)		.01*(.01)		.01(.01)	
Trip Duration^2	.00003(.0001)		.000002(.0001)		-.0003**(.0001)		-.0002*(.0001)	
Constant	2.59***(.13)		2.56***(.08)		2.84***(.16)		2.75***(.12)	

Note. *p < .05, **p < .01, ***p < .001; Employment: Employed = 1, Currently not employed = 0; Gender: Female = 0, Male = 1; Airport country difference: USA = 0, Brazil = 1; Airport status difference: Domestic = 0, International = 1; Departure/Return Stage: Departure = 0, Return = 1.

while H10a-b are fully accepted.

Age has a differential impact based on stress types. Age reduces SAE at the *departure-flight* stage (all: $\beta = -0.01$, $p < .01$; employed: $\beta = -0.01$, $p < .001$) (Table 1), yet increases SOP upon *return-flight* stage (employed: $\beta = 0.01$, $p < .05$)[3] (Table 2). Age does not affect SAS (Table 3). H11a-b are conditionally accepted. No statistically significant effect is found for *gender* on any stress types (Table 2), H12a-b are thus rejected.

Conclusively, easily accessible measures explain a portion of the variance of the three stress dimensions (Tables 1–3). With job strain incorporated, situational factors contribute more to the explanation of variance in SOP (departure: 5.9%; return: 7.9%) than personal factors (departure: 4.1%; return: 6.6%). Situational factors also explain more of SAS at the *departure-flight* stage (departure: 3.5%; return: 4.1%), while personal factors explain more at the return-flight stage (departure: 2.3%; return: 7.0%). Furthermore, personal factors explain more variance in SAE (departure: 6.2%; return: 8.5%) than trip-specific factors (departure: 0.6%; return: 5.8%).

4. Conclusion and discussion

This study proposes a schema premised on Hobfoll's (1989) Conservation of Resources theory as a systematic and standardized approach to identify the potential influential factors of travel stress by analyzing their impacts on resource dynamics over the entirety of a leisure trip. Within the travel domain, the study focuses on the air-travel context for demonstrative purposes. Specifically, we identified the potential influential factors of air-travel stress over different air-travel stages out of a series of personal and situational factors readily available to airlines/airports (see summary of hypotheses results in Table 4). Specifically, the findings demonstrate the COR-identified influence variations by travel stages (Research Q1) and reveal novel patterns of cross-stage variations. Second, cross-stressor variations are identified (Research Q2). Third, all the COR-identified factors except for *cultural distance*, *airport status* and *gender* are established as influential to air-travel stress. These findings emphasize the importance of a context-based COR prediction and interpretation of influences on travel stress. The interpretation of the discrepancies from hypotheses further highlight the potential unique resource(s) for handling each stressor type and shed light on the interpretation of cross-stressor influence pattern differences.

[3] The statistical significance is only established among the employed population, possibly because a potential negative confounding effect by job strain. The older age groups may have less job strain and thus less spillover stress from work to vacation, which counteracts the potential stress-intensifying effect from aging due to resource deficiency. Therefore, the effect from age could appear after controlling for the ameliorating job strain effect.

Table 2
The influences of personal/situational factors on air-travel stress toward other passengers.

Predictor	Stress about Other Passengers (SOP)							
	Departure (N = 505)		Departure (N = 412) (Employed only; with Job Pressure)		Return (N = 410)		Return (N = 340) (Employed only; with Job Pressure)	
	β(SE)	R^2 (ΔR^2)	β(SE)	R^2 (ΔR^2)	β(SE)	R^2 (ΔR^2)	β(SE)	R^2 (ΔR^2)
Step 1: Personal Factors								
Age	-.004(.004)	.009(.009)	-.001(.004)	.041(.041)	.01(.004)	.032(.032)	.01*(.005)	.066(.066)
Gender	.05(.11)		.03(.1)		-.17(.1)		-.21(.12)	
Employment	.13(.13)				.23(.13)			
Travel Freq.	.004(.004)		.01*(.004)		.01(.01)		.02(.01)	
Job Strain			.2***(.05)				.22***(.07)	
Constant	2.28***(.13)		2.27***(.07)		2.21***(.12)		2.44***(.09)	
Step 2: Trip Factors (with linear term of trip duration)								
Age	-.01(.004)	.037(.028)	.0003(.004)	.096(.055)	.01(.004)	.099(.067)	.01*(.005)	.144(.078)
Gender	.06(.11)		.04(.1)		-.19(.1)		-.27*(.11)	
Employment	.14(.13)				.21(.13)			
Travel Freq.	.002(.004)		.004(.004)		.01(.01)		.02(.01)	
Job Strain			.18***(.05)				.21**(.07)	
Flight Dist.	.00002(.00002)		.00003*(.00001)		.00004**(.00001)		.00005***(.00001)	
Cultural Dist.	.01(.07)		-.06(.07)		-.06(.07)		-.005(.08)	
Destination Exp.	.13*(.07)		.09(.06)		.11(.09)		.11(.1)	
Companion Num	-.05(.07)		-.04(.07)		.14*(.07)		.1(.08)	
Country of Airport	.18(.25)		.32**(.11)		.34**(.11)		.25*(.12)	
Airport Status	-.14(.12)		-.05(.1)		.14(.13)		.25(.14)	
Trip Duration	-.01(.005)		-.01***(.004)		-.001(.003)		-.0002(.004)	
Constant	2.35***(.15)		2.4***(.11)		2.28***(.16)		2.41***(.14)	
Step 3: Trip Factors (with quadratic term of trip duration)								
Age	-.01(.004)	.054(.017)	.0001(.004)	.1(.004)	.01(.004)	.099(.000)	.01*(.005)	.145(.001)
Gender	.08(.11)		.04(.1)		-.19(.1)		-.27*(.12)	
Employment	.14(.13)				.21(.13)			
Travel Freq.	.002(.004)		.005(.004)		.01(.01)		.02(.01)	
Job Strain			.17***(.05)				.21***(.07)	
Flight Dist.	.00001(.00001)		.00003(.00001)		.00004**(.00001)		.00005***(.00001)	
Cultural Dist.	.001(.07)		-.07(.07)		-.06(.07)		-.01(.08)	
Destination Exp.	.13*(.07)		.09(.06)		.11(.09)		.11(.1)	
Companion Num	-.04(.07)		-.04(.07)		.14*(.07)		.1(.08)	
Country of Airport	.15(.25)		.3**(.11)		.34**(.11)		.24*(.12)	
Airport Status	-.11(.12)		-.04(.1)		.14(.13)		.24(.14)	
Trip Duration	.01(.01)		-.004(.007)		-.002(.006)		.0003(.006)	
Trip Duration^2	-.0004**(.0001)		-.0002(.0001)		.000007(.0001)		-.00001(.0001)	
Constant	2.36***(.15)		2.42***(.1)		2.28***(.17)		2.41***(.14)	

Note. *p < .05, **p < .01, ***p < .001; Employment: Employed = 1, Currently not employed = 0; Gender: Female = 0, Male = 1; Airport country difference: USA = 0, Brazil = 1; Airport status difference: Domestic = 0, International = 1; Departure/Return Stage: Departure = 0, Return = 1.

The proposed stressor-specific resource dynamics useful in explaining the revealed discrepancies from the hypotheses can be found in Table 4, corresponding to each hypothesis and stressor type.

4.1. Implications

4.1.1. Theoretical implications

This study advances the travel stress literature, Conservation of Resources theory, and travel stress methodology. To begin with, this study set out to establish a framework that holistically accounts for the complexity of the micro-, meso-, and macro-level influences on travel stress. We introduced the COR framework, adjusted it to the travel stress context, and further advanced it. By doing so, our study eliminates the theoretical black box between various levels of influential factors and travel stress by converting them into the resource consumption, conservation, investment, and gain, dynamics. This allows for a systematic assessment of personal and situational factors that can potentially affect travel stress at different trip stages and given various stressors.

Further, the current research for the first time proposes the necessity of multi-stage joint travel-stress analyses for improved accuracy. Namely, stress at a certain travel stage (e.g., upon-departure) should be assessed based on analyzing the potential influences on not only the focal stage but also the other travel stages, given the interconnected resource dynamics between stages. Besides, the transportation stages connect leisure travel and daily life and are critical in determining the overall stress level and well-being benefits of a leisure trip (Nawijn et al., 2010). The study thus contributes by illuminating their underexplored stress mechanisms.

We also extend the COR in three ways by refining its structure, further disclosing its hidden mechanisms, and revealing its unexploited potential in stress management. First, we push the COR boundaries and refine its structure by proposing an adapted resource typology from Hobfoll's (1989) predominant categorization of resources (personal, condition, object, and energy). Specifically, we focus on the resources changeable in the short term (physical, cognitive, affective, social, and dispositional) to understand the stress-shaping resource dynamics over a relatively short-lasting activity such as leisure travel. We suggest that this focused examination is better suited for evaluating temporary stress rather than chronic stress, where the original typology is mostly applied. By narrowing the scope and homogenizing each category, our study strengthens the practical value of resource conceptualization. The relatively homogeneous typology also allows for more meaningful between-context comparisons of resource dynamics. These findings could further be extended by exploring between-stage or between-setting differences in consumption patterns.

Second, this study contributes to unravelling the complexity of resource dynamics and disclosing the hidden mechanisms of COR, by revealing a) the interactive dynamics between resource types and b) the

Table 3
The influences of personal/situational factors on air-travel stress toward regular airline/airport service deliveries.

Predictor	Stress about Airline/Airport Services (SAS)							
	Departure (N = 505)		Departure(N = 412) (Employed only; with Job Pressure)		Return (N = 410)		Return(N = 340) (Employed only; with Job Pressure)	
	β(*SE*)	R^2 (ΔR^2)	β(*SE*)	R^2 (ΔR^2)	β(*SE*)	R^2 (ΔR^2)	β(*SE*)	R^2 (ΔR^2)
Step 1: Personal Factors								
Age	-.003(.004)	.029(.029)	.0005(.003)	.023(.023)	-.005(.003)	.067(.067)	-.004(.004)	.07(.07)
Gender	-.03(.1)		.01(.09)		-.14(.09)		-.13(.1)	
Employment	.28*(.12)				.26*(.12)			
Travel Freq.	.01(.01)		.01(.01)		.04***(.01)		.04***(.01)	
Job Strain			.09*(.04)				.16**(.06)	
Constant	2.03***(.12)		2.22***(.06)		1.78***(.1)		2.04***(.08)	
Step 2: Trip Factors (with linear term of trip duration)								
Age	-.01(.004)	.06(.031)	.0005(.003)	.057(.034)	-.005(.003)	.093(.026)	-.004(.004)	.108(.038)
Gender	-.004(.1)		.005(.09)		-.14(.09)		-.13(.1)	
Employment	.27*(.12)				.27*(.11)			
Travel Freq.	.01(.01)		.01(.01)		.03**(.01)		.03**(.01)	
Job Strain			.08(.04)				.18**(.06)	
Flight Dist.	.00002(.00002)		.000003(.00001)		-.000003(.00001)		.000003(.00001)	
Cultural Dist.	.05(.07)		.07(.07)		-.02(.06)		-.01(.07)	
Destination Exp.	.11(.06)		.07(.06)		.08(.08)		.1(.09)	
Companion Num	.09(.06)		.08(.05)		-.01(.06)		-.04(.07)	
Country of Airport	.44*(.18)		.28***(.09)		.01(.1)		-.09(.11)	
Airport Status	-.02(.1)		-.01(.09)		.04(.1)		.07(.11)	
Trip Duration	.0003(.004)		.0003(.003)		-.01*(.003)		-.01(.004)	
Constant	2.04***(.14)		2.32***(.09)		1.74***(.14)		1.94***(.12)	
Step 3: Trip Factors (with quadratic term of trip duration)								
Age	-.01(.004)	.061(.001)	.001(.003)	.058(.001)	-.005(.003)	.096(.003)	-.004(.004)	.111(.003)
Gender	-.01(.1)		.002(.09)		-.15(.09)		-.13(.1)	
Employment	.27*(.12)				.28*(.12)			
Travel Freq.	.01(.01)		.01(.01)		.03**(.01)		.03**(.01)	
Job Strain			.08(.04)				.18***(.06)	
Flight Dist.	.00002(.00002)		.000004(.00001)		-.000002 (.00001)		.000005(.00001)	
Cultural Dist.	.05(.07)		.07(.07)		-.01(.06)		-.002(.07)	
Destination Exp.	.12(.06)		.07(.06)		.08(.08)		.1(.09)	
Companion Num	.09(.06)		.08(.05)		-.01(.06)		-.03(.07)	
Country of Airport	.45*(.18)		.29***(.09)		.01(.1)		-.06(.11)	
Airport Status	-.02(.1)		-.02(.09)		.04(.1)		.08(.11)	
Trip Duration	-.003(.006)		-.004(.006)		-.01*(.01)		-.01*(.01)	
Trip Duration^2	.00008(.0001)		.0001(.0001)		.0001(.0001)		.0001(.0001)	
Constant	2.04***(.14)		2.31***(.09)		1.71***(.14)		1.92***(.12)	

Note. *p < .05, **p < .01, ***p < .001; Employment: Employed = 1, Currently not employed = 0; Gender: Female = 0, Male = 1; Airport country difference: USA = 0, Brazil = 1; Airport status difference: Domestic = 0, International = 1; Departure/Return Stage: Departure = 0, Return = 1.

temporal resource evolvement patterns. Hobfoll et al. (2018) recently called for further advances of the COR regarding how resource types may interactively shape stress levels. Our results respond with an implied potential interaction between dispositional resources and foundational resources (i.e., physical, cognitive, affective, and social). Despite the dominant significance of dispositional resources in allocating foundational resources and determining stress levels (Halbesleben et al., 2014), the insufficiency of foundational resources can also limit the effectiveness of dispositional resources in coping with stressors. Our findings suggest a possible suppression of stress-alleviating effects from self-efficacy/empathy by a shortage of physical/affective resources exhausted over the trip. Further, this study adds to the COR literature by accounting for the role of time, per the request of Hobfoll et al. (2018). So far, only limited attempts have been made to integrate a temporal component to the use of resources (Halbesleben et al., 2014). This study goes beyond the early findings by establishing a potential curvilinear relationship between trip duration and resource sufficiency as indicated by stress levels. Specifically, a longer trip may benefit rather than exhaust the resource reservoir only when the length of the leisure trip exceeds a certain threshold. Thus, our findings respond to Hobfoll et al. (2018, p.114) to explore the roles time could play in resource dynamics, ranging "from the amount of time over which resources are lost or gained, to the length of recovery periods necessary to regain resources …". Future research may further extend on the findings by estimating how the trip length could affect resource consumption/restorage patterns at travel stages beyond air travel, such as the post-trip duration before the restored resources from vacation are depleted.

Third, this study further unveils the unexploited potential and further the value of COR in guiding the stress management research. On one hand, existing COR literature has not explored how a certain activity can transition between resource losses and investments. We proposed a process of how resource losses can be transformed into resource investments via a setting that facilitates resource gains. For example, before flight departure a longer trip may seem to consume more cognitive and affective resources for travelers with high job strain. Yet once they experience the longer trip, it can turn into a resource investment because it facilitates gains of self-esteem and restorage of consumed resources. It enlightens a promising direction for alleviating travel stress by encouraging travelers to devote more resources to coping with travel stressors, given the resource consumption being an investment rather than loss. More importantly, this proposed angle suggests the still-underrated potential of COR in managing stress of different kinds in individual life, by pointing out the decisive factor of how resource consumption is construed as well as the promising role of activity context in facilitating or inhibiting the positive construal of resource consumption. On the other hand, this study proposes a direction that could further enhance the accuracy of COR-based stress analyses. It establishes the paramount significance for COR-based stress

Table 4
Hypotheses results and interpretation.

Influential Factors	Air-travel stress						Potential Stressor-specific Resource Dynamics		
	Departure Flight			*Return Flight*					
	SAE	SOP	SAS	SAE	SOP	SAS	SAE	SOP	SAS
							self-oriented dispositional resource of *resilience* depends on *energy* and *self-efficacy* which has a symbiotic relationship with *self-esteem* (rationalized in 2.3.2.1) (Hobfoll, 2011).	**social-oriented dispositional resource of *empathy*** (Buchwald, 2003): individual empathy for others is largely determined by perceived *social* resources (e.g., social support) (Park et al., 2015).	**social-oriented dispositional resource of *trust*** (Chenet, Dagger, & O'Sullivan, 2010):
H1: Trip Duration	ns.	∩	ns.	∩	ns.	-	- only when the trip becomes long enough (≥12 days), can the *energy* be significantly boosted, and sufficient *self-efficacy* be acquired over a trip to support the adequate *resilience* investment at the *return-flight* stage	- only a long-enough trip (≥21 days) allows the anticipated during-trip gain of *social* resources (i.e., connection with important others/strangers) overshadowing their anticipated/experienced consumption (i.e., group travel coordination), and boost *empathy* (Tucker, 2016) - insignificance at the *return-flight* stage is related to consumed more *empathy* from social encounters/coordination effort) over a longer trip (Keller, Novembre, & Hove, 2014)	- *trust* in air-service providers should have little relevance to the duration of trip not experienced yet, hence the revealed *departure-flight* insignificance; - experienced flight and diverse hospitality services over the trip provide a concrete base for building the *trust* (Bilgihan, 2016) and form more realistic service expectations (Langner et al., 2016), thus the lower *return-flight* SAS levels with longer trips
H2: Cultural Distance	ns.	ns.	ns.	ns.	ns.	ns.	- at the *departure-flight* stage, tourist should not consciously anticipate much potential gains/losses of dispositional resources (i.e., *self-efficacy, empathy*, and *trust*) as associated with the culture of the destination just yet (Gnoth & Matteucci, 2014), thus the irrelevance of cultural distance at this stage. - the actual experience of a culturally distant destination allows travelers to enjoy a sense of existential authenticity leading to *self-esteem* and *self-efficacy* gains, which yet are somewhat offset by the decline of *energy*, *empathy*, and *trust* due to the increased cultural distance (Bjørnstad, Fostervold, & Ulleberg, 2013)		
H3: Flight Distance	ns.	+	ns.	+	+	ns.	- longer flight distance results in a greater likelihood of *physical* and *emotional* exhaustion, which further leads to a declined sense of *self-efficacy* (Bandura, 2010) and accordingly lesser extent of *return-flight resilience* - The *anticipated* flight distance at the *departure-flight* stage, however, should not cast much influence on *self-efficacy* and ultimately on *resilience*	- the *emotional* exhaustion from a long-distance trip can further limit the employment of affectively-demanding *empathy* by tourists (Passalacqua & Segrin, 2012)	- the *trust* resource consumption is not closely related to geographical distance increases.
H4: Previous Destination Experience	ns.	+	ns.	ns.	ns.	ns.	- *resilience* and its determinants of *self-efficacy* and *energy*, should at least be higher in *upon-departure* storage among repeated travelers to a destination (Karl, 2018). - due to destination familiarity, the earned *self-efficacy* may be negligible or inadequate to make a difference in coping with irregular adversities at the *return-flight* stage.	- the richer destination experience can result in a decline of anticipated gains of positive *affection* from the destination exploration, which then prompts repeated travelers to conserve than exhaust their affective resources in affection-demanding *empathy* offerings to other passengers (Passalacqua & Segrin, 2012).	- the extent of destination experiences may not affect much the *trust* in airline/airport services, given the possibly diverse airline brands serving a same destination.
H5: Number of Travel Companions	ns.	ns.	ns.	ns.	+	ns.	- the companion number should be less relevant to *self-efficacy*	- *empathy* exhaustion before departure may be limited and can be compensated by the gained *empathy*-supporting *social support* travelling with a larger group (Park et al., 2013).	- the companion number is less relevant to *trust* in airline/airport services
H6: Airport Location Differences	ns.	+	+	+	+	ns.	- it is likely attributed to the fast-growing purchasing power and resulted increasing travel demands in developing countries like Brazil, which imposes strains on their airport infrastructure and services to meet the growing demand (Lorenz, Johnson, & Barakat, 2017).		
H7: Airport Status Differences	ns.	ns.	ns.	ns.	ns.	ns.	- despite the greater sizes and operational complexities, international airport operations show comparative effectiveness in preventing and handling passenger stressors to domestic airports (Graham, 2018).		
H8: Travel Frequency	-	+	ns.	ns.	ns.	+	- at the *departure-flight* stage, the greater *self-efficacy* is acquired from richer travel experiences (Lepp & Gibson, 2008), and results in the higher *resilience* - the *upon-return* physical exhaustion and deficit of *energy,* which similarly present among	- the joint consumption of *empathy* in both workplace and frequent trips gives rise to employed tourists' *empathy* exhaustion and sensitivity to others' unpleasant behaviors at the *departure-flight* stage. - at the *return-flight* stage, the employed tourists experience the deficit of *affective* resources, namely the raising	- frequent travelers have richer travel knowledge and consume less information processing and judgment capacities over the trip (*cognitive* resources) than infrequent travelers. This allows spare cognitive resources to be deployed in evaluating airline/

(*continued on next page*)

Table 4 (*continued*)

Influential Factors	Air-travel stress						Potential Stressor-specific Resource Dynamics		
	Departure Flight			*Return Flight*					
	SAE	SOP	SAS	SAE	SOP	SAS	SAE	SOP	SAS
							frequent and infrequent travelers and limit their *resilience* to adversities.	negative emotions (e.g., anxiety and regret) in response to the forthcoming work duties, and thus the resulted reluctance to consume the affective-demanding *empathy*	airport service deliveries, hence the identification of service drawbacks and resulted somewhat *mistrust* about service providers.
H9: Employment	ns.	ns.	+	ns.	ns.	+	- employment status alone may not necessarily influence travel-related *energy* and *self-efficacy* to significantly vary SAE	- employment status alone may not influence much travel-related *social support* or *affective resources to* significantly vary SOP	- *trust* consumption in work settings (Robertson, Gockel, & Brauner, 2013) has caused the *before-departure* depletion of trust resource and the *upon-return* tendency of trust conservation for upcoming work duties.
H10: Job Strain	+	+	+	+	+	+	- job strain should at least inhibit the investment of *energy*, *affection*, and *trust* resources and thus it shows significant stress intensifying effects at both flight-taking stages, given the considerable resource demands from work before departure and after returning to work		
H11: Age	-	ns.	ns.	ns.	+	ns.	- the older travelers tend to have greater confidence in *self-efficacy* based on years of experiences and the resulted *resilience* increase. - such effect seems to fade out at the *return-flight* stage considering the during-trip exhaustion of physical *energy* and resulted compromise of *resilience* (Fox et al., 2017).	- besides confirming the greater resource exhaustion related to age in leisure trips (Kirillova et al., 2017), it found older population as having less empathy resource stored (Grühn & Scheibe, 2008), hence the greater likelihood of *empathy* exhaustion *upon return*.	- the insignificance could be due to the counteracting effects of older tourists' a) allocation of more cognitive resources to service quality evaluation based on greater value-conscious tendency (Sharma, Chen, & Luk, 2012), and thus the greater sensitivity to service pitfalls, and b) greater tendency to trust others/service providers (Verhaeghe & Bracke, 2011)
H12: Gender	ns.	ns.	ns.	ns.	ns.	ns.	- females overall gain greater extent of *self-esteem* from leisure trips than males (Kirillova et al., 2017), which is associated with a greater level of *self-efficacy* (Hobfoll, 2011) that buffers the greater *energy* exhaustion and potential *resilience* deficit among females than males.	- females' before/during-trip consumption of *physical/cognitive/affective* resources (to offer social support to peers) may have cultivated a resource gain spiral that gains females more *social support* in return and thus no less *empathy* and *trust* in storage than males at air-travel stages	

Notes. SAS = Stress toward Airline/Airport service deliveries, SAE = Stress toward Adverse Events; SOP = Stress toward Other Passengers.

analysis to center on stressors. In addition to the common resources identified in the literature review that should affect air-travel stress regardless of stressors, this study denotes the existence of stressor-specific resource types (see Table 4). These resource types are indispensable to certain stressors and may exhibit a disproportional importance in shaping the corresponding stress reactions. Future research may conduct a stressor-based decomposition of resources for coping and rank those by importance to improve the accuracy of COR-based stress analysis. Taking a step further, the potential strategies facilitating the restorage or preventing the depletion of the identified most critical resource type(s) can be accordingly developed and experimented, for stress alleviation effectiveness when facing the corresponding stressor. For instance, whether an individual's stress level corresponding to the stressor of noisy crowds would significantly decline when this individual adopts various emotion regulation strategies to conserve the most critical coping support-the affective resources. This direction extends the scope of potential stress management strategies to be considered, which further broadens the scope of COR's contribution to stress management research.

Finally, with regards to methodological advances, this study collects data from travelers at the gates while they are still experiencing air-travel stress. The data thereby captures multiple facets of air-travel stress. It covers not only the passengers' recalled stress that was experienced before arriving at the gate (e.g., fear of missing a flight), but also their stress reactions to the ongoing stressors (e.g., uncertainty with possible flight delay or airport crowdedness), as well as anticipated ones (e.g., potential insufficiency of luggage space or noisy fellow passengers). Both experienced and anticipated stressors trigger people's currently experienced stress levels (Spacapan & Cohen, 1983). Existing literature mostly only captures air-travel stress retrospectively, while travelers are surveyed either at the destination (Larsen et al., 2009; Reisinger & Mavondo, 2005) or after they already returned home based on experience recall (Chen, 2017; Chen et al., 2016; Deng & Ritchie, 2018). Even though a limited number of studies collect data directly from passengers at airports, these are still primarily retrospective and collected after the trip is completed (Batouei et al., 2019; Beck, Rose, & Merkert, 2018). In other words, those passengers should not feel the air-travel stress at the time of measure as the flight was already taken. In our study, participants are still waiting to take a flight, allowing us to capture the real-time felt stress toward the before-boarding process as well as the upcoming boarding and flight experiences. This rare and difficult form of data collection allows for more accurate measures of stress levels for improved stress analyses. Our study is also unique in the sense of distinguishing between departure and return stages, which enables the exploration of the potential variations of stress levels and sources of influences between stages, as proposed by existing literature (Chen et al., 2018).

4.1.2. Practical implications

By identifying the potential influential personal and situational factors of travelers' air-travel stress, this study provides airlines and airports with a direction to strategically and effectively manage the passenger stress levels through marketing, service delivery, and crisis management. Airlines and airports may generate profiles based on the sensitivity of certain traveler groups or travel contexts and create tailored programs or initiatives. As all these influential factors are readily accessible in airline/airport databases, they provide a feasible and convenient approach for industrial stress management. The detailed profile of more sensitive passenger groups and contexts corresponding to each air-travel stressor and flight stage is listed in Table 5 (with factors ranked by their relative extent of influence on stress).

Following the profiling, the potential resource dynamics underlying the identified influences on air-travel stress can further guide more effective service design and marketing initiatives for stress alleviation. Some example initiatives toward each group in Table 5 are recommended as follows.

First, passengers who are more susceptible to stress toward irregular adverse events (SAE) can enjoy a more relaxing flight experience with airlines/airports supporting their resilience resource. This can be done by demonstrating efforts preventing adverse events (stressor removal), providing clear instruction on what the passenger can do (self-efficacy support) or promising reliable assistance such as a compensatory night of stay at the airport hotel (social or energy support) if any uncontrollable adverse events indeed occur. Marketing promotions delivering assuring messages corresponding to the above aspects also better appeal to these travelers. The close monitoring of passengers sensitive to adverse events is also beneficial to crisis prevention and management, as it can help avert or rapidly spot passenger illness or extremely negative eWOM caused by travel stress.

Second, when it comes to enhancing flight experiences by cultivating a comfortable social environment, airlines/airports should be mindful about those passengers more sensitive to fellow passengers' unpleasant behaviors (SOP). They can potentially incorporate this factor in service design such as seat assignment and boarding order designation (stressor removal) or can potentially show more personalized care or empathy to these passengers (empathy support via social support). These people are also the more promising target markets for promoting services that can minimize social interference such as first-class cabins and priority boarding (i.e., monetary investment for gains of affective resources).

Third, to manage the fast-spreading tension about unsatisfied regular airline/airport service deliveries (SAS) and mistrust in an airline/airport, the airline/airport can pay special attention to the service feedback of passengers who are potentially more sensitive to unsatisfactory service deliveries. If any service failure occurs, airlines/airports should offer social support by encouraging this group to voice concerns to their staff right away and provide a sincere and satisfactory recovery the sooner the better (e.g., with apologies, problem fixes, proper compensation, and value recognition of their feedback). These people may also be more attracted by a marketing message with a service guarantee to assure high service quality (stressor removal).

4.2. Limitations and future research

This study's limitations provide fertile ground for future research. First, we limited the consideration of potential resource dynamics shaping the air-travel stress to those with literature support. Additional resource dynamics may also arise upon the availability of new empirical evidence. Future studies can also develop a more fine-grained list of the specific resource types falling into each category of physical, cognitive, affective, social, and dispositional resources. Our primary goal is to establish a solid theoretical foundation that can guide the prediction of all-level influences (i.e., macro, meso, and micro) on leisure-travel stress of diverse stages/types. Future explorations may include the development and validation of measures for different resource types, quantifying the mediation effects of resource types connecting influential factors with travel stress, and identifying effective resource-supportive interventions for stress alleviation.

Also, the findings suggest that readily available factors alone explain less than 15% of the total air-travel stress variance, for which the collection of data on more in-depth factors may still be necessary to accurately predict the stress levels. Future studies may include additional variables, such as personality traits, stress levels in other aspects of life (i.e., work, family, health, etc.), relationships and travel experiences with companions, engaged activities during the trip, as well as the airline brand(s) of taken flights and connection duration. More samples with no current employment, younger than 20 years old, or travelling with a big group (10 companions or more) may further enhance the explanatory power (Appendix I). Future studies may also estimate existing variables differently. For example, the proxy of geographical distance (between the surveyed airport and travel destination) is only a rough estimate, due to the possibility of the current airport being a connection point. While the current data was collected in 2008 (before the financial crisis), more recent data collection (in the before-COVID regular settings) would have been preferrable. One advantage of that timing, nevertheless, is not being immediately after any major events (e.g., the September 11, 2001 attacks), which largely protects the generalizability of findings from any extreme and fluctuating short-term influences of major events. More importantly, a key contribution of this study is proposing and demonstrating the application of a COR-based schema for identifying shaping forces of travel stress. The proposed schema should be applicable to travel stress analyses under any contexts (i.e., given influences from micro-, meso-, or macro-level factors and regardless of the past, present, or the future). The identified influences on air-travel stress also offer enduring value, as our exploration on air-travel stress is based on stressors that persist through years and still commonly trigger passengers' stress reactions as of now. Therefore, the collection timing should not significantly limit the generalizability of our research findings. In fact, this study offers a baseline air-travel stress

Table 5
Profile of sensitive traveler groups and travel contexts to stressors across stages.

Stressor Type	Flight Stage	Sensitive Passenger Group	Sensitive Travel Context
Irregular Adverse Events (e.g., cancelled/delayed flights, risk of terrorism/public health emergencies)	Departure Flight	• with more stressful occupations younger • infrequent travelers	N/A
	Return Flight	• with more stressful occupations	• travelling for around 2 weeks (11–12 days) taking a long-haul flight
Unpleasant Behaviors of Other Passengers	Departure Flight	• stressful occupations • frequent travelers	• repeated visit to the same destination • travelling for around 3 weeks (20–21 days) taking a long-haul flight
	Return Flight	• with more stressful occupations older	• travelling with more companions taking a long-haul flight
Regular Service Delivery Failures (e.g., empathetic service attitude, deliver as promised)	Departure Flight	• currently employed • with more stressful occupations	• repeated visit to the same destination
	Return Flight	• currently employed • with more stressful occupations frequent travelers	• shorter vacation duration

Note. The profile features are ranked based on their relative importance to predict the corresponding type of air-travel stress.

analysis for future research to conduct a similar study after the pandemic and compare, in order to identify to what extent the pandemic may have or not have significantly changed the demographic/trip-specific influences on air-travel stress and the associated resource dynamics.

In addition, the current study adopts a cross-sectional between-subjects design in identifying the influences on air-travel stress. This can minimize the learning and transferring effects between departure- and return-flight stages (Caplan, Lane, & Grimson, 1995). Ideally a supplementary within-subject tracking of stress fluctuation (e.g., repeated cross-sectional design) can further reduce the random noise due to uncontrolled individual differences. Adding a stress measurement during the flight can also enhance the accuracy by measuring all sources of real-time stress, while the current study only captured the real-time stress related to airports as well as their anticipated stress toward onboard experiences, due to the challenges of onboard data collection. Future research may consider adopting experience sampling methods to improve the accuracy (Halbesleben et al., 2014).

Moreover, future research may evaluate stress as reactions to different stressors and at all trip stages (rather than the current focus on air-travel stages), and most importantly, measure the status of relevant resource types at each stage. This will be important to (1) establish the resource dynamics between stages that cause the stress fluctuations, and (2) identify the most critical resource types to travel stress alleviation, which can further inform the trip design that boosts leisure-travel benefits for well-being.

Finally, the current study essentially examines how the micro-level factors (i.e., personal and trip-focused situational factors) and stressors jointly affect resource dynamics resulting in travel stress. Future research can also introduce resource-gain facilitators (as opposed to the resource-consuming stressors, such as enhanced efficiency due to technology advances) and higher-level factors (i.e., meso-factors such as the air industry trend of reducing leg space, and macro-factors like political tension). In this sense, the proposed COR framework offers the potential for future research to bridge the individual experience with macro-level policy making.

Declaration of Interest Statement

None.

Impact statement

This study introduces a COR-adapted schema for travel stress analyses, demonstrated with air-travel stages. This schema for the first time allows a holistic and standardized exploration of the influences from factors at different levels-macro-level(e.g., economic/technological/environmental advances/crises), meso-level(e.g., business policies/strategies), or micro-level(e.g., individual life changes)- on stress levels across different travel stages. The understanding of the shaping forces of travel stress, their patterns of influences, and the underlying shaping mechanisms can guide the service and marketing design to effectively manage travel stress levels. This is critical to encouraging frequent travel, enhancing brand loyalty, and facilitating well-being from leisure travel. The *holistic* assessment of travel stress by accounting for resource dynamics from other travel stages also deems necessary to plan for the growing tourist expectation of seamless travel experiences. This study also advocates for fully capitalizing on existing tourist data in business/industrial databases to achieve efficient industry stress management.

Contribution

Ye Zhang: Conceptualization, Data Analyses, Writing the initial draft, and Revisions, Jase Ramsey: Data Collection, Conceptualization, Data Analyses, Writing the initial draft, and Revisions, Melanie Lorenz: Conceptualization, Writing the initial draft, and Revisions.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.tourman.2020.104240.

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