

# Development and Evaluation of the Air Travel Stress Scale

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Despite anecdotal evidence suggesting that air travel is personally demanding, little research has examined air travel stress. To address these issues, the author developed and evaluated the 1st known measure of air travel stress—the Air Travel Stress Scale—in 3 studies. Exploratory and confirmatory factor analysis indicated 3 components: (a) anxious reactions to adverse air travel events, (b) angry reactions to other passengers as well as an antecedent of air travel stress, and (c) the lack of trust that the airlines/airports will ensure one's comfort and safety. Each component had good internal reliability and test–retest reliability over a 6- to 7-week interval. Each component showed evidence for discriminant and convergent validity. Implications for research into understanding and intervening on air travel stress are discussed.

*Keywords:* air travel, flying, stress, anxiety, anger, trust

Over 1.6 billion passengers boarded the world's airlines in 2002 (International Civil Aviation Organization, 1999, 2003) and 1.7 billion in 2003 (International Civil Aviation Organization, 2003, 2004). In the United States's airports, there were over 675 million airline passengers in 2002 and 682 million in 2003 (Bureau of Transportation Statistics, 2004). Despite the large and growing number of air travelers around the globe, many of whom fly out of necessity, little research has been conducted on the stress associated with taking a flight. For a number of years and especially since the September 11, 2001, terrorist attacks, hundreds of media reports worldwide have anecdotally described the stresses of air travel, ranging from the hassles of long airport security lines to threats of airline hijackings or bombings. Moreover, media reports have suggested that air travel stressors such as airport crowds, flight delays, and cancellations have important consequences: They may lead some people to experience work-related stress or avoid flying altogether (see, e.g., "Crowded skies," 2004; Rayner, 1998; Sharkey, 2000; Trucco, 2003; Zoglin & Donnelly, 2002).

These consequences could be of special concern to counseling psychologists who research and/or intervene in the problems of work-related stress or fears of flying.

The unique nature of air travel suggests that a reliable and valid measure of air travel stress is needed. Just as test anxiety sensitivity may exist independently of sensitivity to other kinds of stressors (Sarason, 1975), the demanding situations of air travel may lead to stress reactions in a person who would not normally experience stress. One of the unique and potentially stress-inducing qualities of the air travel environment is that it is a situation in which the basic goal to transit from one locale to another in a way that is safe and comfortable can be compromised by many different uncontrollable situations that block that basic goal. The uncontrollability characterizing air travel may be what makes air travel stress distinct from the stress elicited by other forms of transportation. For example, whereas drivers are at the controls of their vehicle, air travelers are not at the controls of the airplane, cannot enter and exit the airplane or their seat when they choose, and are subjected to search of their person and belongings by security personnel. Moreover, air travel environments present a series of potential adverse events in a concentrated period of time that may provoke anxious and angry reactions from travelers. These events may include long lines, flight delays, and the rude behavior of other passengers. The uncontrollable and impersonal qualities of this regulated environment may make it difficult for individuals to cope adaptively with their stress reactions.

An air travel-specific measure of stress could be valuable to counseling psychology as well as a broad range of other disciplines. Such a measure could be an essential tool in developing an empirical understanding of important psychological questions, including (a) What are the psychological determinants of air travel stress, and are they similar to or different from other forms of general and situation-specific stress? (b) What are the characteristics of those who experience high versus low levels of air travel stress? and (c) What psychological treatments could prevent or reduce air travel stress? Analogous questions have recently been explored by counseling psychologists in the domain of driving

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anger (Deffenbacher, Filetti, Richards, Lynch, & Oetting, 2003; Deffenbacher, Huff, Lynch, Oetting, & Salvatore, 2000).

An air travel stress measure could be valuable to counseling psychologists who treat individuals and to those who consult with organizations. First, counseling psychologists who treat individuals with flying phobia (Bor, Parker, & Papadopoulos, 2001) or driving anger (Deffenbacher et al., 2000) could enhance their understanding of their clients' problems by assessing their clients' air travel stress. It is conceivable that clients with a fear of flying are substantially more likely to experience the related phenomenon of air travel stress. Clients with problems managing their anger, in general or in driving situations, may also tend to express a lot of anger when they confront stressors while transiting through airports or flying on planes. Second, counseling psychologists who treat work-related stress (Portello & Long, 2001) could also assess for indications of air travel stress among their clients who are business travelers. Such assessments might also help counseling psychologists find interventions for coping with flying. Similarly, consulting counseling psychologists (Shullman, 2002) could use an air travel stress measure in work-stress management workshops they deliver to employees of organizations.

Whereas there are measures of how stress is experienced in general (e.g., Sarason, Johnson, & Siegel, 1978) and in driving a car (e.g., Deffenbacher, Oetting, & Lynch, 1994) as well as measures of the related problem of flying phobia (e.g., Van Gerwen, Spinhoven, Van Dyck, & Diekstra, 1999), there are no known measures of air travel stress. This article describes the development and evaluation of a measure of air travel stress, the Air Travel Stress Scale (ATSS).

### The Construct of Air Travel Stress

Despite its apparent prevalence, there has been little conceptualization of air travel stress. Consistent with an appraisal model of stress (Sarason et al., 1978; Tache & Selye, 1985), air travel situations can be perceived as demanding action from individuals that is beyond their capabilities or making them feel helpless to act. Because stress contains strong subjective elements, whether an air travel situation is perceived as being stressful depends on what beliefs and appraisals travelers have about these situations.

Perceived air travel stress elicits strong emotional reactions, including anxiety and anger. The components of anxiety include anxious affect, worry about the possibility of future negative events, and somatic responses, such as a racing heart (Barlow, 1988, 1991; Craske, 1991; H. J. Eysenck, 1967; M. W. Eysenck, 1981). A traveler might feel tense when a flight is delayed, feel nervous when he or she is running late for a flight, or be concerned about another passenger doing something dangerous on the plane. Air travel situations can also elicit various forms of angry reactions. The components of anger include angry affect, hostile thoughts, aggressive intentions, and physiological arousal (Barefoot et al., 1987; Cook & Medley, 1954; Spielberger et al., 1985). An air traveler might experience annoyance and resentment when he or she perceives other passengers or airline/airport personnel as engaging in behavior that negatively affects his or her safety or comfort. A traveler with hostile thoughts may have a tendency to attribute the behavior of other passengers to rudeness.

### Generation of ATSS Item Pool

Overall, air travel anxiety and air travel anger can be conceived as situational experiences of the general tendencies to be anxious or angry. As such, it was necessary to identify the air travel situations that elicit these emotions. To generate candidate ATSS items that identify these air travel situations, I first created a data collection Web site that asked open-ended questions about the air travel situations that make one anxious or angry. Participants completing the questions on this Web site were 329 management consultants. I chose consultants because individuals in this occupation often fly for business purposes. A recruitment E-mail describing the study and providing a link to the data collection Web site was sent to potential participants by the human resources department of the Seattle and San Francisco offices of a large management consulting company.

In addition to this data collection Web site, I also interviewed 57 (31 men and 26 women) Seattle-Tacoma Airport travelers. I approached these travelers while they were waiting in line to check in for their flight, at gate departure lounges, at baggage claim areas, and at airport concessions (i.e., restaurants and massage service). I identified myself as a University of Washington doctoral student and explained that I wanted to interview them for 10 min about their experience of air travel. Overall, the item-generation process led to a total of 61 items (27 for air travel anxiety, 34 for air travel anger). These items were then reviewed in interviews with Seattle-Tacoma Airport travelers (8 men, 10 women), flight attendants (1 man, 2 women), airline ticket counter agents (2 men, 2 women), and airline security personnel (2 men, 2 women). These individuals were asked, via open-ended questions, whether there were omissions or redundant items. Participants also rated the items for clarity (i.e., grammar, wording) and representativeness (i.e., how much this statement seemed to describe an upsetting air travel situation). I then reviewed all the items several times, which resulted in some removal and rewording of items. This process resulted in a pool of 48 items (22 on air travel anxiety and 26 on air travel anger). Although I made a thorough attempt to have representative items, there is a reasonable potential for bias in these items because of a number of possible factors (e.g., recruitment rates are unknown, highly anxious or angry travelers might have been unwilling to participate in the airport interviews or Web-based data collection).

The studies in this article report on the next steps of the ATSS development and evaluation. In this article, I examine the ATSS factor structure, reliability, and discriminant and convergent validity using three studies with five samples (see Table 1). Study 1 explores the ATSS factor structure and psychometric properties. Study 2 confirms the factor structure with a separate sample and examines the ATSS's test-retest reliability. Study 3 addresses the ATSS's discriminant and convergent validity by examining its associations with measures of a variety of constructs.

### Study 1: Exploration of Factor Structure and Psychometric Properties

#### Overview

As the first test of a new construct, the purpose of Study 1 is to explore the factor structure of the pool of 48 ATSS items based on

Table 1  
Methodological Characteristics of All Samples

Sample	Study no.	Dates collected	<i>n</i>	Recruitment rate	Data collection location	Participant privacy	Participation method
A	1	May–June 2001	615	71.4% (615/861) <sup>a</sup>	Seattle–Tacoma Airport	Anonymous	Paper and pencil
B	2, 3	April 2002	3,309	Incalculable <sup>b</sup>	Nationwide	Anonymous and confidential <sup>c</sup>	Secured Web site
C	2, 3	June 2002	2,382 <sup>a</sup>	Incalculable <sup>b</sup>	Nationwide	Confidential <sup>c</sup>	Secured Web site
D	3	July 2001	345	73.1% (345/472) <sup>d</sup>	Seattle–Tacoma Airport	Anonymous	Paper and pencil
E	3	January–February 2002	925	72.3% (925/1,280) <sup>d</sup>	Seattle–Tacoma Airport	Anonymous	Paper and pencil

Note. All of the data collection procedures were approved by the University of Washington Human Subjects Review Committee.

<sup>a</sup> In these samples, the recruitment rate was defined as the total number of individuals who participated in the data collection divided by the total number of individuals who were approached for participation by the data collectors. <sup>b</sup> The number of individuals who read the study recruitment notices in the sources mentioning the study is unknown, so the recruitment rates for these samples are incalculable. <sup>c</sup> Participants who elected to participate in Sample C ( $n = 2,674$ ), which was the follow-up of Sample B, were asked to provide their E-mail address in order that they could be contacted to participate. These individuals' participation was therefore confidential. In contrast, those participants who only elected to participate in Sample B ( $n = 635$ ) were not asked to provide their E-mail address. These individuals' participation was therefore anonymous. <sup>d</sup> Sample C was a 6- to 7-week follow-up of Sample B. The retention rate of Sample C was 72.0% (2,382/3,309).

the two hypothesized domains of air travel stress: air travel anxiety and air travel anger. Using factor analysis, I explored two models: (a) a model showing that Air Travel Anxiety and Air Travel Anger are two separate factors, and (b) a model reflecting Air Travel Anxiety and Air Travel Anger as one factor. This second model is an exploration of the negative affectivity hypothesis, which states that negative moods such as anxiety, anger, and sadness all reflect a single emotional construct (Watson & Clark, 1984).

### Method

**Participants.** Participants were 615 Seattle–Tacoma Airport travelers (see Sample A of Table 1). The demographic characteristics of the participants are presented in Table 2. This study sample's (Sample A's) demographic characteristics were in line with the findings of other large surveys of Seattle–Tacoma Airport travelers (International Air Transport Association, 2002).

**Measure.** Air travel stress was assessed with the 48-item ATSS. The directions are,

A number of statements which people have used to describe their experiences of air travel are given below. Please select the rating that BEST indicates the extent to which you agree with the following statements. There are no right or wrong responses.

Respondents rated the extent to which each item was true for them on a response scale ranging from 0 (*completely disagree*) to 5 (*completely agree*). A sample item is, "I fear that I will miss a connecting flight." The scale was labeled Air Travel Experiences Scale to help conceal the intent of the survey and thereby reduce response bias.

**Procedure.** The trained data collectors (one man, one woman) each had 3 years of experience as data collectors in other survey research. The data collectors wore official airport photo identification and solicited travelers' participation by verbal request. Potential participants were approached sequentially (one by one) where they were seated at a random sample of gate departure lounges, baggage claim areas, and airport concessions. Potential participants who were walking or standing in these areas were also approached. Although these methods of approaching potential participants were intended to result in a representative sample of those who were in the airport on the occasions of data collection, there is a reasonable potential for selection bias.

When a traveler agreed to participate in the 15–20-min survey while at the airport, the data collectors gave the participant an informed consent form and the survey packet. When a participant completed the survey packet, a data collector took the packet and thanked the participant for being in the study. Participants were not compensated. The 79 individuals who elected to complete the survey at a later time were given a self-addressed, stamped envelope to mail in their survey. Fifty-two percent (41 of 79; 6.7% of the total sample) of these individuals actually mailed in their

Table 2  
Demographic Characteristics of All Samples

Characteristic	Sample A ( <i>n</i> = 615)	Sample B ( <i>n</i> = 3,309)	Sample C ( <i>n</i> = 2,382)	Sample D ( <i>n</i> = 345)	Sample E ( <i>n</i> = 925)
Male (%)	52.6	39.0	38.2	56.7	54.3
White or Caucasian (%)	84.0	87.3	89.1	85.1	80.6
Married or with partner (%)	61.8	50.3	53.2	60.3	58.0
More than high school education (%)	79.9	58.4	63.2	85.9	84.4
Age ( <i>M</i> )	43.5	37.0	39.0	41.8	41.0
Age (years)	11–86	12–78	12–78	12–86	10–85
Air travel patterns for the past 12 months					
No. domestic roundtrips ( <i>Mdn</i> )	4.0	3.0	4.0	4.0	3.0
Flies for business at least half time (%)	45.6	42.2	47.0	47.6	50.8

survey. There was no evidence that these 41 participants significantly differed ( $p > .05$ ) from the rest of the sample on gender, ethnicity, marital status, education, or age. The recruitment rate was 71.4% overall.

*Statistical analysis.* Two exploratory factor analyses were conducted on the ATSS. A principal axis factor extraction was conducted to explain the common variance in the observed variables in terms of underlying latent factors. The principal axis factor extraction, rather than a principal-components extraction, was conducted because the latter method can yield inflated factor loadings because of the inclusion of error variance (Tabachnick & Fidell, 1996). The oblique method of rotation was used to permit the obtained components to correlate and, therefore, followed the assumption that the ATSS components are related yet distinct from each other (Lee & Comrey, 1979). Cronbach's alpha internal consistencies of the components were also computed.

## Results and Discussion

*First exploratory factor analysis.* The distribution of each of the 48 ATSS items was first examined. For seven items, 75.0% or more of the participants' responses fell on one of the two extreme response options, and these items were removed for lack of variation. Participants probably gave extreme responses to these seven items because the items were either very high or very low in social desirability. For example, an item that was removed because of a very low rate of endorsement was, "I would feel like getting angry if a flight attendant stopped serving me alcohol."

In the factor analysis of the remaining 41 items, a scree test (Cattell, 1966) suggested a three-factor solution. There was a precipitous drop in the plot between the third and fourth factor, with a gradual trailing of the remaining factors. This three-factor solution explained 48.0% of the variance, with the first factor explaining 25.6% (eigenvalue = 5.4) of the variance and the second and third factors explaining an additional 13.7% (eigenvalue = 2.8) and 8.9% (eigenvalue = 1.7), respectively. Twenty-two items loaded greater than .45 on one factor and less than .25 on any other factor. These loading criteria were used because of previous evidence that the stability of a factor solution is influenced by the magnitude of factor loadings (e.g., Arrindell & Van der Ende, 1985), to minimize cross-loadings, and to create a relatively brief instrument. In addition, I used the criterion of a minimum loading of three items on each factor (Floyd & Widman, 1995) and interpretability (i.e., made conceptual sense) in considering items for retention. These 22 items constituted the ATSS.

Note that two of the three factors identified were consistent with the hypothesized constructs of air travel anxiety and air travel anger discussed in the introduction: (a) The Air Travel Anxiety factor had eight items that appeared to measure anxious cognitions (i.e., worry), affect, and physical sensations in response to adverse air travel events; (b) the Air Travel Anger factor had six items that appeared to measure hostile intentions and irritation in response to other passengers' behavior.

However, a third factor, called Airline/Airport Trust, also was identified that was not hypothesized at the start. The items composing this factor were originally conceptualized as one aspect of Air Travel Anger. This third factor could be described as the individual's belief that the airlines and airports can generally be trusted to ensure his or her comfort and safety. It is believed that low levels of Airport/Airline Trust characterize a hostile sentiment toward those organizations, whereas high levels of this trust reflect positive sentiments toward those organizations. To the extent that

a person believes an airline or airport cannot be trusted to ensure his or her comfort and security, it is reasonable to conclude that person would experience stress while taking a commercial airplane flight. Therefore, it is speculated that a low level of Airline/Airport Trust is an antecedent of air travel stress.

*Second factor analysis.* For exploration of the negative affectivity hypothesis and for the interested reader's information, I repeated the above factor analysis, except this time the analysis specified extraction of two factors. This specification tested the possibility that (a) Air Travel Anger and Air Travel Anxiety reflect a single factor, tentatively called negative affectivity, and (b) Airline/Airport Trust reflects a second factor.

The results showed that the two-factor model explained less variance (41.0%) than the three-factor model (48.0%). The first factor was labeled Combined Anxiety/Anger because it comprised all the items from the Air Travel Anger factor and all the items from the Air Travel Anxiety factor. The loadings for the Combined Anxiety/Anger factor were from .19 to .62. The second factor, Airline/Airport Trust, comprised the same items with similar loadings as those identified in the Airline/Airport Trust factor in Table 3.

*Correlations among the ATSS factors.* The small to moderate relations among the three factors provide evidence that they each reflect related yet distinct constructs. Air Travel Anxiety's correlations with Air Travel Anger and Airline/Airport Trust were .47 ( $p < .001$ ) and  $-.27$  ( $p < .001$ ), respectively. Air Travel Anger was correlated  $-.21$  ( $p < .001$ ) with Airline/Airport Trust. The Combined Anxiety/Anger score's (average of Air Travel Anxiety and Air Travel Anger items) correlation with Airline/Airport Trust was  $-.24$  ( $p < .001$ ).

*Descriptive statistics for the ATSS factors.* The descriptive statistics for the three ATSS factors (see Sample A in Table 4) suggest the possibility that participants generally reported moderate air travel stress, but the standard deviations suggest there was considerable variability in this stress. The skewness and distributions (kurtosis) of the factors suggest they were normally distributed. The components showed good internal consistency, especially given that they each had six or eight items. The coefficient alpha for the Combined Anxiety/Anger factor was slightly higher than the other ATSS factor, perhaps because as more items are added to a factor (the Combined Anxiety/Anger factor has 14 items), the total factor reliability increases (Nunnally, 1978).

## Study 2: Confirmation of ATSS Factor Structure

### Overview

In Study 2, a confirmatory factor analysis (CFA) using structural equation modeling of a separate sample was used to investigate the factor stability of the three-factor solution of the ATSS from Study 1. Such investigation is important because factor structures may poorly replicate across samples (MacCallum, Widaman, Zhang, & Hong, 1999). In contrast to the exploratory factor analysis of Study 1, the purpose of the CFA models using structural equation modeling is to (a) provide a precise test of a priori hypothesized factors using fit indices and (b) specify which items load on which factors (Kline, 1998). The analysis of Study 2 provides an a priori test of three possible ATSS factor structures: (a) a three-factor model of the factors Airline/Airport Trust, Air



Table 3  
*Three-Factor Model of Air Travel Stress Scale: Factor Analysis*

Item	Factor loadings		
	1	2	3
Air Travel Anxiety: Anxious reactions to adverse air travel events			
My body feels tense if my flight is delayed.	.67	.06	.02
I feel shaky if the airport is crowded.	.63	-.05	-.02
I feel shaky if I have to sit on the tarmac/taxiway for a long time.	.58	-.01	.01
I worry other passengers may do something harmful on the plane.	.57	-.12	.04
I feel panicky when I am running late for a flight.	.54	.10	-.12
I fear that I will miss a connecting flight.	.47	.09	.03
I fear that my baggage will be lost/stolen/damaged.	.46	.07	.12
I worry that my flight will be cancelled.	.45	.08	.05
Air Travel Anger: Angry reactions to other passengers			
I want to say mean things when other passengers take up part of my personal space on the plane.	-.03	.62	.06
I feel like screaming at passengers who bring aboard a lot of carry-on baggage.	.03	.59	.03
I would feel resentful if I had to sit near loud/talkative passengers.	.13	.50	-.01
It would bother me if other passengers tried to board the plane before their row was called.	.11	.49	-.07
I feel annoyed when babies/small children are on the plane.	-.01	.49	.07
It bothers me when other passengers want special treatment.	-.02	.45	-.02
Airline/Airport Trust: Belief that airline/airport will ensure comfort and security			
Airlines give me the service I deserve.	.06	-.11	.77
I trust the airlines.	-.14	.08	.75
I think airlines appreciate their passengers.	.04	-.09	.73
I feel satisfied with airlines service overall.	.02	-.08	.70
I think airline personnel are doing the best job they can.	.00	.00	.67
Current airport security measures make me feel safe about flying.	-.07	.10	.64
Current airport security measures deter hijackings or bombings.	.01	.09	.57
I sometimes think airline/airport personnel are unfriendly or unhelpful. <sup>a</sup>	.03	.16	.53

<sup>a</sup> Item was reverse coded.

Travel Anxiety, and Air Travel Anger; (b) a two-factor model of the factors Combined Anxiety/Anger and Airline/Airport Trust; and (c) a one-factor model in which the ATSS items reflect one component. (Air travel stress is the only construct examined in Study 2.)

The second purpose of Study 2 is to examine the 6- to 7-week test-retest reliability of the ATSS. I chose a 6- to 7-week time interval because I deemed it conservatively long enough to minimize the possibility of remembering responses provided on the first administration.

## Method

**Participants.** Participants were a nationwide sample of 3,309 self-identified air travelers (see Sample B of Table 1). Compared with the sample in Study 1 (see Sample A in Table 2), the sample in Study 2 (see Sample B in Table 2) included a higher percentage (21.5 percentage point difference;  $p < .001$ ) of individuals who had no more than a high school education.

For the test-retest reliability analysis, participants were from Sample C (see Table 1), a follow-up of Sample B. Compared with Sample B, Sample C's 2,382 participants had very similar demographic characteristics (see Table 2), with small magnitudes of differences that would likely have a negligible impact on the test-retest reliability analysis.

**Measure.** The measure used was the 22-item version of the ATSS.

**Procedure.** For the purpose of evaluating the factor structure of the ATSS with a large, geographically diverse cross-section of self-identified leisure and business air travelers, I collected data via a Web site. In response to a University of Washington press release describing the data collection Web site, the following media sources wrote articles about the study that invited potential participants: *Atlanta Journal Constitution*, *Frequent Flyer Magazine*, and MSNBC. Data collection occurred over a period of 2 weeks.

The Web site was secured by 128-bit encryption. Participants provided their E-mail address so that they could participate in a brief follow-up survey for the test-retest reliability analysis. The E-mail address was not linked to their survey data. Anyone entering the Web site was allowed to participate in the study. After agreeing to an online information statement at the beginning of the Web site, participants completed the survey. All participants were entered in a drawing for one of ten \$50 cash prizes. Participants who completed the survey multiple times were detected by the recording of the Internet protocol address of the computer that submitted the responses. All of the survey responses provided by these 28 participants were deleted.

**Follow-up survey.** Participants who elected to participate in the follow-up survey for the test-retest reliability analysis were asked to provide their E-mail address. Six weeks after the completion of the initial data collection, a follow-up recruitment message was sent to the E-mail address the participants provided. To maximize the follow-up rate (72.0%), this E-mail was sent two times, 7 days apart. Thus, the test-retest interval was 6 to 7 weeks.

Table 4  
*Descriptive Statistics for the Air Travel Stress Scale (ATSS) Factors Across All Samples*

ATSS component and sample	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	$\alpha$
Air Travel Anxiety					
A	2.46	0.88	-.22	-.09	.79
B	2.16	0.89	.06	-.33	.79
C	2.13	0.93	.06	-.42	.83
D	2.39	0.87	-.06	-.32	.77
E	1.89	0.88	.14	-.43	.79
Air Travel Anger					
A	1.94	1.05	.20	-.64	.75
B	2.52	0.88	-.07	-.28	.70
C	2.48	0.87	-.06	-.36	.73
D	2.31	0.90	.00	-.18	.71
E	2.10	0.90	.02	-.42	.71
Combined Air Travel Anxiety/Anger					
A	2.17	0.78	-.14	-.21	.82
B	2.35	0.74	-.05	-.13	.80
C	2.29	0.77	-.03	-.24	.83
D	2.35	0.78	-.08	-.10	.83
E	1.99	0.78	.05	-.29	.83
Airline/Airport Trust					
A	2.61	0.81	-.72	.58	.83
B	2.55	0.96	-.32	-.33	.88
C	2.57	0.96	-.36	-.36	.88
D	2.92	0.93	-.57	.02	.84
E	3.20	0.80	-.68	.67	.82

*Note.* Scale scores ranged from 0 to 5, with higher mean scores reflecting higher levels of the given construct.

When participants logged into the Web site, they entered their E-mail address and the personalized password they created during the baseline survey. After they entered their password, they completed the ATSS. Several demographic questions were also asked to double check the matching of participants' baseline and follow-up survey. (Follow-up surveys from 9 participants whose surveys could not be matched were deleted.) Participants completing this follow-up survey were entered in a separate drawing for one of ten \$100 cash prizes.

*Statistical analysis.* Using the EQS 5.7b (Bentler, 1995) structural equation modeling program, I conducted a CFA to determine the adequacy of the factor loadings, model fit, and the pattern of intercorrelations among the latent factors.

Three models were tested. The first model tested whether the variability of the items could be accounted for by three latent constructs: Air Travel Anxiety, Air Travel Anger, and Airline/Airport Trust. The second model determined whether the variability of the items could be accounted for by two latent constructs: Combined Anxiety/Anger and Airline/Airport Trust. In the strongest models, each indicator has a high loading on only one factor. Therefore, in the two-factor and one-factor models, the parameter estimates for nonloading factors were set to zero. On the basis of the conceptual model of the ATSS, the factors were correlated with each other in the three-factor and two-factor models. These correlations between factors, by extension, allowed the correlations of the ATSS items contained in one factor to be correlated with items contained in another hypothesized factor (Kline, 1998). The third model determined whether the variability of the items could be accounted for by one latent construct. To examine the test-retest reliability of the ATSS, I calculated correlations between each pair of time points.

### Results and Discussion

*CFA.* The first CFA evaluated the three-factor model of air travel stress. The chi-square goodness of fit was significant,  $\chi^2(152, N = 3,309) = 1,102.63, p < .001$ , a result that is typically found with large sample sizes (Bentler, 1990; Jöreskog & Sörbom,

1984). However, the normed fit index (NFI; .94), comparative fit index (CFI; .95), goodness of fit index (GFI; .96), and root-mean-squared error of approximation (RMSEA; .047; 90% confidence interval = .045, .050) all met standards for a close-fitting model (Bentler, 1990; Jöreskog & Sörbom, 1984). The parameter estimates were moderate to high (ranging from .42 to .81), suggesting that the items reflect the constructs they were expected to load on.

The comparison of the three different models showed that the three-factor model provided a better fit to the data than did the one-factor model,  $\Delta\chi^2(5, N = 3,309) = 6,025.54, p < .001$ , or the two-factor model,  $\Delta\chi^2(3, N = 3,309) = 1,003.95, p < .001$ . Moreover, the one-factor model had a poorer fit to the data (NFI = .61, CFI = .62, GFI = .78, RMSEA = .127), as did the two-factor model (NFI = .88, CFI = .88, GFI = .89, RMSEA = .071).

*Correlations among the ATSS factors.* The moderate relations among the three factors again provides evidence that they each reflect related yet distinct constructs. The correlation between Air Travel Anxiety and Air Travel Anger was .37 ( $p < .001$ ), the correlation between Air Travel Anxiety and Airline/Airport Trust was  $-.29$  ( $p < .001$ ), and the correlation between Air Travel Anger and Airline/Airport Trust was  $-.24$  ( $p < .001$ ).

*Descriptive statistics of the final version of the ATSS.* As shown in Table 4 (see Samples B and C), the means for all three factors again suggest the possibility that participants generally reported moderate air travel stress. Overall, the ATSS components' distributions were again close to normal, with a good spread around the mean and good internal consistency.

*Test-retest reliability.* The following correlations were obtained for the 6- to 7-week test-retest reliabilities:  $r = .81, p < .001$  ( $n = 2,382$ ) for Air Travel Anxiety;  $r = .81, p < .001$  ( $n = 2,382$ ) for Air Travel Anger;  $r = .87, p < .001$  ( $n = 2,382$ ) for

Airline/Airport Trust; and  $r = .81, p < .001$  ( $n = 2,382$ ) for Combined Anxiety/Anger. According to the guidelines of Cicchetti (1994), these test-retest reliabilities suggest that the ATSS factors possess good stability over time.

### Study 3: ATSS Correlations With Measures of Potentially Related Constructs

#### Overview

The purpose of Study 3 is to examine four basic kinds of constructs that are hypothesized to be related to air travel stress. This analysis asks the question, Does the new measure correlate with related constructs in sensible ways, in expected magnitudes and directions (Cronbach & Meehl, 1955)? These individual-differences measures were chosen because each seemed to suggest a conceptual basis for having more or less vulnerability to air travel anxiety, air travel anger, or airline/airport trust. Study 3 examines the discriminant and convergent validity of the ATSS, specifically by determining whether the different dimensions of air travel stress, in expected ways, form stronger relations with certain individual-differences measures than with others.

#### Constructs That Potentially Correlate With Air Travel Stress

Four basic kinds of constructs may be related to air travel stress: (a) situation-specific stress constructs, (b) general life stress constructs, (c) general coping style constructs, and (d) general personality trait constructs. The conceptualization and rationale for examining these constructs, as well as the hypotheses about the relation among many of these constructs and air travel stress, are discussed in this section. Each of these constructs is assessed in Study 3.

*Situation-specific stress constructs.* Situation-specific constructs that may be associated with air travel stress include state stress, fear of flying, and driving anger. State stress is a transitory condition involving generally unpleasant feelings, including fear and anxiety (Spielberger, 1983). People experiencing high state stress while at an airport may experience high air travel anxiety.

Fear of flying appears to be a heterogeneous phenomenon that likely includes the fear of heights, fear of injury, fear of confinement, claustrophobia, fear of loss of control, or even a combination of these (Van Gerwen et al., 1999). Perhaps Air Travel Anxiety is strongly correlated (e.g.,  $r = .50$  to  $.60$ ) with the fear of flying. One speculation is that the more people fear flying, the more likely they are to experience anxious reactions to adverse air travel situations, such as flight delays. Flying phobia should also be weakly related to air travel anger because flight phobics, by definition, tend to feel afraid and not angry.

Trait driving anger is the propensity to become angry while driving an automobile (Deffenbacher et al., 1994). Trait driving anger has been found to be related to higher levels of trait anger, anger suppression, and anger frequency (Deffenbacher et al., 2000). It is speculated that air travel anger is moderately related to driving anger. On one hand, air travel anger and driving anger both refer to angry reactions to other people's behavior in travel environments. On the other hand, air travel and driving can potentially provoke different levels of anger. In contrast with drivers, air

travelers are forced to be in very close proximity to other passengers, often for more than several hours. Moreover, there are no physical barriers (e.g., an automobile) between the traveler and other passengers and airline/airport personnel. Once on the airplane (or, as some may argue, beyond the security checkpoint), travelers must stay in close proximity to the other passengers.

*General life stress constructs.* A number of general life stress constructs may be associated with air travel stress, including the constructs of stressful life events and recent hassles. Major stressful life events, which are distal to the person's immediate life circumstance, may exert some of their impact through the exacerbation of more proximal stressors and demands (e.g., hassles) with which the person must attempt to cope (Felner et al., 1986). It is possible that severe negative life events may lead an individual to have fewer resources with which to cope with the demands of air travel.

A substantial literature suggests that everyday hassles or mundane irritants negatively affect physical and mental health (e.g., Burks & Martin, 1985; Kanner, Coyne, Schaefer, & Lazarus, 1981; Weinberger, Hiner, & Tierney, 1987). The main difference between the ATSS and measures of daily hassles is that the ATSS measures the hassles of a particular situation, whereas daily hassles scales measure hassles across a variety of life experiences. People who perceived hassles in general are probably likely to perceive hassles while traveling by plane.

*General coping styles.* Lazarus and Folkman's (1984) model of stress and a model of behavioral self-regulation (Carver & Scheier, 1981) together form the conceptual basis of the COPE inventory (Carver, Scheier, & Weintraub, 1989). Five general coping styles assessed in the COPE inventory may be related to air travel stress: substance use, venting, acceptance, positive reframing, and active coping. The use of substances is conceptualized as a maladaptive coping style that mentally avoids stress (Carver et al., 1989). The uniquely uncontrollable and impersonal qualities of the air travel environment may make it difficult for individuals to choose adaptive ways to cope with their stress reactions. Because stressed air travelers may believe that there are few adaptive coping strategies available in that environment, they may be somewhat more likely to use unhealthy coping strategies, such as substance use.

Venting is defined as the tendency to focus on whatever distress or upset one is experiencing and to freely express those feelings (Scheff, 1979). Carver et al. (1989) have argued that venting may sometimes be functional, especially in uncontrollable stressful situations. One could presume that the hassles of air travel may present opportunities for people to cope by complaining about adverse air travel events, other passengers' behavior, and their experiences with airline/airport personnel.

It is arguable that acceptance is a functional coping response, in that a person who accepts the reality of a stressful situation seems to be a person who is engaged in the attempt to deal with that situation (Carver et al., 1989). If people believe that there is nothing they can do to change the stressors of air travel, then the tendency to accept these problems may help ameliorate stress. If there is nothing that can be done, people may stop worrying about air travel stressors.

Positive reframing is a potentially adaptive coping technique that refers to mental strategies for reinterpreting a stressful situation in a positive light (e.g., seeing a glass half full as opposed to

half empty). Positive reframing has been associated with positive affect after the occurrence of stressful events (for a review, see Aldwin, 1994). The tendency to look for the positive features of a challenging air travel situation may help ameliorate air travel stress. People who tend to cope in this way may believe the stressors of air travel are not as bad as they seem.

Active coping refers to efforts directed at managing stressful situations, including strategies for gathering information, making decisions, planning, and resolving conflicts and instrumental task-oriented actions (Lazarus & Folkman, 1984). It may be that certain kinds of air travel stressors can be effectively managed with an active coping style. In particular, the adverse air travel events that evoke air travel anxiety may be changed by a variety of practical strategies as long as a person is resourceful and aware of the operations of the air travel system and his or her rights as a passenger. For example, if a flight is delayed, it is reasonable to imagine that an active copier would seek ways to rebook himself or herself on a flight leaving sooner through the same or another airline.

*General personality traits.* Appraisals of air travel stress may be intrinsically tied to underlying stable personality characteristics, including trait anxiety, trait anger, negative affectivity, optimism, and social desirability. Trait anxiety is defined as the propensity to experience feelings of tension and apprehension and to have heightened autonomic nervous system activity (Spielberger, Gorsuch, & Lushene, 1970). Trait anxiety was related to higher levels of subjectively appraised overall stress and recent hassles (Kohn, Lafreniere, & Gurevich, 1991). Although air travel anxiety should be related to trait anxiety, air travel is a unique environment, and the demanding situations that air travel presents may provoke anxiety in a person who would not normally become anxious. In contrast, because Air Travel Anger and Airline/Airport Trust are conceptualized as measuring anger and trust in air travel situations, these scales should be less correlated with trait anxiety than Air Travel Anxiety.

Trait anger is a personality disposition, defined in terms of the frequency of angry states experienced over time (Spielberger et al., 1983). Trait anger has been associated with driving anger (Deffenbacher et al., 2000) and neighborhood stress (Ewart & Suchday, 2002). People who tend to become angry in general should be more likely to become angry in air travel situations. However, air travel is a unique environment, and the situations that air travel presents may provoke anger and hostility in a person who would not normally become angry. In contrast, Air Travel Anxiety is believed to measure the propensity to react anxiously, as opposed to angrily, to adverse air travel events. Therefore, trait anger should be less correlated with Air Travel Anxiety than with Air Travel Anger.

Negative affectivity refers to individual differences in the tendency to experience a variety of negative mood states, including anxiety and anger (Watson & Clark, 1984). Negative affectivity may be an important moderator of stress reactivity, increasing the intensity of negative mood responses to minor stressors (Bolger & Zuckerman, 1995; Marco & Suls, 1993). Air Travel Anxiety and Air Travel Anger would probably be positively correlated with negative affectivity. Although negative affectivity encompasses anxiety and anger, it also encompasses a wide range of other negative emotions, including sadness and guilt.

Optimism is conceived of as a generalized expectancy for favorable or unfavorable outcomes (Scheier & Carver, 1985). Dispositional optimists have shown moderately less mood disturbance in response to a number of different stressors, including adaptation to college (Aspinwall & Taylor, 1992; Scheier & Carver, 1992) and breast cancer surgery (Carver et al., 1993). Optimists probably view the problems they experience in air travel situations as inconveniences and try to make the best of an unpleasant situation. However, because some air travel problems are often uncontrollable, the belief that things will get better should have only a modest influence on reducing air travel stress.

Social desirability is defined as a general personality trait, namely, the tendency to give socially desirable and intentionally distorted responses in self-description (Edwards, 1970). The correlation between the 22-item ATSS and social desirability scales was expected to be in the  $-.15$  to  $-.25$  range, consistent with the correlations observed with other stress scales (Ruehlman, Lanyon, & Karoly, 1999).

## Method

*Participants.* Consistent with the methodology of other scale evaluation studies (see, e.g., Carver et al., 1989; Jay & John, 2004), participants for this study were from multiple samples: Samples B, C, D, and E (see Table 1). These samples were selected because they are the ones for which ATSS data were collected along with measures of potentially related constructs.

*Procedure.* Participants completed the ATSS along with measures of 16 potentially related constructs.

*Measures.* Air travel stress was assessed, in all samples, with the final 22-item version of the ATSS.

*State stress* was assessed, in Sample E, by the four-item (current  $\alpha = .85$ ;  $M = 1.39$ ,  $SD = 1.14$ ) State Stress Scale, which I wrote, that measures stress experienced while at an airport, as rated on a scale ranging from 0 (*not at all*) to 5 (*very much*), with higher scores reflecting more stress.

*Stress of one's most recent flight* was assessed, in Sample C, by a one-item measure (current  $M = 2.70$ ,  $SD = 1.24$ ) written by me, rated on a scale ranging from 0 (*not at all*) to 5 (*extremely*).

Except for trait anxiety and trait anger, all of the following instruments were completed by Sample B:

1. *Fear of flying* was assessed by the 18-item (current  $\alpha = .95$ ;  $M = 0.95$ ,  $SD = 0.80$ ) Flight Anxiety Modality Scale (Van Gerwen et al., 1999), on which symptoms of anxiety or anticipated anxiety in flight situations are rated on a scale from 0 (*no reaction*) to 4 (*very intense reaction*), with higher scores reflecting more anxiety.

2. *Anger when driving* was assessed by the 14-item (current  $\alpha = .87$ ;  $M = 2.00$ ,  $SD = 0.66$ ) Driving Anger Scale (Deffenbacher et al., 1994), on which amount of anger when encountering the situation described is rated on a scale ranging from 1 (*not at all*) to 5 (*very much*), with higher scores reflecting more anger.

3. *Stressful life events* were assessed by the 50-item (current  $\alpha = .72$ ;  $M = -0.01$ ,  $SD = 0.19$ ) Life Experiences Survey (Sarason et al., 1978), on which the severity of various recent important life change events is rated on a scale from  $-3$  (*extremely negative*) to 3 (*extremely positive*).

4. *Recent hassles* were assessed by the 41-item (current  $\alpha = .90$ ;  $M = 1.68$ ,  $SD = 0.35$ ) Survey of Recent Life Experiences (Kohn & Macdonald, 1992), on which the frequency of various hassles in the past month is rated on a scale from 1 (*not at all part of my life*) to 5 (*very much part of my life*).

5. *Substance use to cope* was assessed by the six-item (current  $\alpha = .93$ ;  $M = 1.33$ ,  $SD = 0.63$ ) COPE Substance Abuse Scale (Carver et al., 1989), on which the tendency to use various substances to cope is rated on a scale from 1 (*I usually do not do this at all*) to 4 (*I usually do this a lot*).

6. *Venting* was assessed by the six-item (current  $\alpha = .71$ ;  $M = 2.40$ ,



$SD = 0.78$ ) COPE Venting Scale (Carver et al., 1989), on which the tendency to express whatever distress one is experiencing is rated on a scale ranging from 1 (*I usually do not do this at all*) to 4 (*I usually do this a lot*).

7. *Acceptance* was assessed by the four-item (current  $\alpha = .58$ ;  $M = 3.02$ ,  $SD = 0.67$ ) COPE Acceptance Scale (Carver et al., 1989), on which the tendency to accept the reality of a situation is rated on a scale from 1 (*I usually do not do this at all*) to 4 (*I usually do this a lot*).

8. *Positive reframing* was assessed by the five-item (current  $\alpha = .75$ ;  $M = 2.61$ ,  $SD = 0.80$ ) COPE Positive Reframing Scale (Carver et al., 1989), on which the tendency to reinterpret a stressful situation in a positive light is rated on a scale from 1 (*I usually do not do this at all*) to 4 (*I usually do this a lot*).

9. *Active coping* was assessed by the six-item (current  $\alpha = .81$ ;  $M = 3.02$ ,  $SD = 0.67$ ) COPE Active Coping Scale (Carver et al., 1989), on which the tendency to make specific efforts to manage stressful situations is rated on a scale ranging from 1 (*I usually do not do this at all*) to 4 (*I usually do this a lot*).

10. *Trait anxiety* was assessed, in Sample D, by the 20-item (current  $\alpha = .88$ ;  $M = 1.62$ ,  $SD = 0.39$ ) State-Trait Anxiety Inventory—Trait Version (Spielberger et al., 1970), on which the tendency to experience apprehension, tension, nervousness, and worry is rated on a scale ranging from 1 (*almost never*) to 4 (*almost always*).

11. *Trait anger* was assessed, in Sample D, by the 10-item (current  $\alpha = .81$ ;  $M = 1.68$ ,  $SD = 0.46$ ) State-Trait Anger Expression Inventory—Trait Version (Spielberger, 1988), on which the tendency to express feelings of anger and frustration is rated on a scale from 1 (*almost never*) to 4 (*almost always*).

12. *Negative affectivity* was assessed by the 10-item (current  $\alpha = .87$ ;  $M = 0.81$ ,  $SD = 0.63$ ) Negative Affect scale of the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988), on which the tendency to experience negative emotions, such as anger, anxiety, and sadness, is rated on a scale from 0 (*very slightly or not at all*) to 4 (*extremely*).

13. *Optimism* was assessed by the eight-item (current  $\alpha = .87$ ;  $M = 1.46$ ,  $SD = 0.72$ ) Life Orientation Test (Scheier & Carver, 1985), on which expectancies for positive versus negative outcomes are measured on a scale from 0 (*strongly disagree*) to 4 (*strongly agree*).

14. *Social desirability* was assessed by the 13-item (current  $\alpha = .71$ ;  $M = 6.42$ ,  $SD = 2.80$ ) Social Desirability Scale (Reynolds, 1982), on which agreement with socially desirable self-statements is indicated as either 0 (*no*) or 1 (*yes*), with higher scores reflecting more social desirability.

*Statistical analysis.* The ATSS was correlated with the individual-differences measures described in the *Method* section. Interpretations of the size of the correlations were made in line with Cohen's (1988, pp. 79–80) criteria. Correlations between the ATSS and the individual-differences measures, with negative affectivity partialled out, were also computed to determine the extent to which the ATSS reflects negative affectivity. One-tailed, hypothesized *t* tests for differences among correlations (Bruning & Kintz, 1997) were run to see whether the strength of relations between the dimensions of air travel stress and other variables correlated differentially and in expected ways. Finally, the effect size of the differences among these correlations was calculated with the *q* effect size index (Cohen, 1988, pp. 110–116).

## Results and Discussion

Table 5 displays the correlations between the ATSS factors and the measures of (a) situation-specific stress, (b) general life stress and general coping styles, and (c) general personality traits. As expected, the results show that Air Travel Anxiety was strongly associated with stress experienced while at an airport (state stress), whereas it was moderately associated with the situation-specific measures of the stress of one's most recent flight, fear of flying,

and driving anger. Regarding general life stress and coping measures, Air Travel Anxiety was moderately associated with recent hassles, whereas it was weakly related to the impact of major life events, venting, substance use, acceptance, positive reinterpretation, and active coping. Regarding general personality traits, Air Travel Anxiety was moderately associated with higher levels of trait anxiety, trait anger, and negative affectivity and with lower levels of optimism.

Regarding situation-specific stress measures, Air Travel Anger was moderately associated with higher levels of state stress and driving anger, whereas it was weakly associated with the fear of flying and state stress of one's most recent flight. Air Travel Anger was weakly related to general life stress measures and coping style measures. Regarding general personality traits, Air Travel Anger was moderately related to higher levels of trait anger, whereas it was weakly related to trait anxiety and negative affectivity.

Airline/Airport Trust was moderately associated with lower levels of the situation-specific measures of state stress and the stress of one's most recent flight. In contrast, Airline/Airport Trust was weakly associated with all of the other measures.

*Tests for the significance and size of the differences in the associations between the ATSS and the individual-differences measures.* Although the above describes the pattern of relations between the ATSS and a variety of conceptually related individual-differences variables, it does not address whether the different components of air travel stress form significantly stronger hypothesized relations with some individual-differences measures than with others. If such differential associations were found, they would provide more evidence for the convergent and divergent validity of this new scale (Bruning & Kintz, 1997).

The first set of tests was of the relation between Air Travel Anxiety and fear of flying. Air Travel Anxiety was more strongly correlated with fear of flying than with driving anger,  $t(3306) = 4.30$ ,  $p < .001$ , a small effect size ( $q = .095$ ). Moreover, Air Travel Anxiety was significantly more associated with fear of flying than was Air Travel Anger,  $t(3306) = 19.45$ ,  $p < .001$ , a medium effect size ( $q = .372$ ), and Airline/Airport Trust,  $t(3306) = 23.93$ ,  $p < .001$ , a large effect size ( $q = .633$ ).

The second set of tests was of the relation between Air Travel Anger and driving anger. Air Travel Anger was more strongly correlated with driving anger than with fear of flying,  $t(3306) = 21.26$ ,  $p < .001$ , a medium effect size ( $q = .449$ ). Moreover, Air Travel Anger was significantly more associated with driving anger than were Air Travel Anxiety,  $t(3306) = 8.48$ ,  $p < .001$ , a small effect size ( $q = .172$ ), and Airline/Airport Trust,  $t(3306) = 26.99$ ,  $p < .001$ , a large effect size ( $q = .690$ ).

The third set of tests was of the relation between Air Travel Anxiety and trait anxiety. Results showed that the association between Air Travel Anxiety and trait anxiety was not significantly different than the association between Air Travel Anxiety and trait anger,  $t(342) = 1.06$ ,  $p = .14$ . However, Air Travel Anxiety was significantly more correlated with trait anxiety than were Air Travel Anger,  $t(342) = 1.95$ ,  $p < .05$ , a small effect size ( $q = .120$ ), and Airline/Airport Trust,  $t(342) = 4.21$ ,  $p < .001$ , a medium effect size ( $q = .365$ ).

The fourth set of tests was of the relation between Air Travel Anger and trait anger. The association between Air Travel Anger and trait anger was greater than the association between Air Travel Anger and trait anxiety,  $t(342) = 12.90$ ,  $p < .01$ , a small effect size

Table 5  
Correlations Between Air Travel Stress Scale (ATSS) Components and Individual-Differences Measures

ATSS components	Situation-specific stress measures				General life stress measures				General coping style measures				General personality trait measures				
	State stress	Stress of most recent flight	Fear of flying	Driving anger	Negative Life Events		Recent hassles	Substance abuse	Venting	Acceptance	Positive reframing	Active coping	Trait anxiety	Trait anger	Negative affectivity	Optimism	Social desirability
					Impact	Life											
Air Travel Anxiety	.63*	.38*	.44*	.36*	.16*	.37*	.18*	.24*	-.13*	-.07*	-.25*	.35*	.30*	.42*	-.35*	-.19*	
Air Travel Anger	.36*	.13*	.10*	.50*	.18*	.24*	.18*	.23*	.00	-.17*	-.11*	.24*	.43*	.21*	-.25*	-.18*	
Airline/Airport Trust	-.32*	-.39*	-.16*	-.14*	-.18*	-.20*	-.13*	-.13*	.06*	.20*	.02	-.02	-.17*	-.15*	.24*	.12*	

\*  $p < .001$ .

( $q = .215$ ). In addition, Air Travel Anger was significantly more correlated with trait anger than were Air Travel Anxiety,  $t(342) = 2.41, p < .01$ , a small effect size ( $q = .150$ ), and Airline/Airport Trust,  $t(342) = 7.82, p < .001$ , a large effect size ( $q = .632$ ).

Finally, Airline/Airport Trust was significantly more associated with the coping style of positive reinterpretation than was Air Travel Anxiety,  $t(3306) = 9.87, p < .001$ , a small effect size ( $q = .273$ ).

*Interpretation of convergent and discriminant validity evidence.* The observed pattern and test of associations provide some evidence for the convergent and discriminant validity of the ATSS. Two of the ATSS factors were most correlated with conceptually similar measures. Specifically, of all the ATSS factors, Air Travel Anxiety was most strongly correlated with fear of flying and trait anxiety, whereas Air Travel Anger was most strongly correlated with driving anger and trait anger. There is also some evidence that an active coping style may somewhat ameliorate Air Travel Anxiety, perhaps because some adverse air travel events (e.g., a flight cancellation) can be dealt with in a problem-focused manner.

One pattern observed in the correlations is that the situation-specific stress measures were more highly correlated with the ATSS factors than were the general life stress and coping styles as well as general personality traits. This pattern may be because the situation-specific measures are more proximal in the sense that they share properties that are conceptually similar to air travel stress. For example, people who become angry when they drive tend to be more likely to become angry when they are in another transportation situation, in this case, an air travel situation. In contrast, it could be said that the general individual-differences measures are more distal in the sense that they share broader properties with air travel stress. For example, general life events stress is more distal than the particular circumstances of air travel stress. This may explain, for example, why the impact of major life events was weakly correlated with the ATSS factors.

Several associations between the ATSS factors and situation-specific stress measures also provide some support for the convergent and discriminant validity of the ATSS. The moderate to strong association between the ATSS factors and stress levels participants reported while at an airport (i.e., state stress) provides some support for the notion that the propensity to experience air travel stress may lead travelers to experience stress when they are in a specific air travel situation. Further support of this notion comes from the association between the ATSS factors and stress reported for one's most recent flight.

*Partial correlations between the ATSS factors and individual-differences measures, with controls for negative affectivity.* Consistent with the negative affectivity hypothesis (Watson & Clark, 1984), it could be argued that the pattern of correlations between the ATSS factors and the individual-differences measures reflects the possibility that the ATSS is a proxy measure of negative affectivity. To test for this possibility, I partialled negative affectivity out of the correlations between the ATSS and the individual-differences measures. The results showed that most of the correlations in Table 5 that were moderate (i.e.,  $r = .30$  to  $.49$ ; Cohen, 1988) remained moderate and nearly all of the correlations that were small and significant (i.e.,  $r = .10$  to  $.29$ ; Cohen, 1988) remained small and significant after I controlled for negative affectivity. For example, the correlation between Air Travel Anxiety and the stress of one's most recent flight was reduced from  $.38$

to .32 (i.e., a reduction from 14% to 10% shared variance) after I controlled for negative affectivity. However, there were substantial reductions in the correlation between the ATSS and recent hassles as well as optimism. For example, the correlation between Air Travel Anxiety and recent hassles was reduced from .37 to .14 (i.e., a reduction from 14% to 2% shared variance) after I controlled for negative affectivity. One explanation for these results is that negative affectivity was highly correlated with optimism and recent hassles ( $-.56$  and  $.62$ , respectively). Therefore, controlling for negative affectivity might have removed a large portion of the variance that optimism and recent hassles had shared with the ATSS factors.

### General Discussion

This article presents evidence for the factor structure, reliability, and discriminant and convergent validity of a measure of air travel stress. The results indicate three components of air travel stress: anxious reactions to adverse air travel events; angry reactions to other passengers; and one potential antecedent of air travel stress, the lack of trust that the airlines/airports will ensure one's comfort and safety. Each of these three components was normally distributed and had good internal reliability and good test-retest reliability over a 6- to 7-week interval. These three dimensions were moderately correlated with each other, which suggests that they each assess related yet distinct components of air travel stress.

#### *ATSS Factor Structure*

The data across the studies provide evidence for the factor structure of the ATSS. First, ATSS items clustered together on the factors they were intended to measure. The same three-factor structure was found (a) in both exploratory factor analysis and CFA, (b) in both a sample of airport-based travelers and a broad geographic sample of air travelers, (c) in both a moderate (Sample A,  $n = 615$ ) and a large sample (Sample B,  $n = 3,309$ ), and (d) in both a sample collected before (Sample A) and a sample collected after (Sample B) the September 11, 2001, attacks. Also, the factor structure was robust to sampling mode: Sample A was a paper-and-pencil-based survey, whereas Sample B was Web-based.

Airline/Airport Trust, the third component of the ATSS, was found to be a potentially meaningful construct in Studies 1 and 2. This component was originally conceptualized as one aspect of Air Travel Anger. However, this construct may be more clearly conceptualized as a potential antecedent of air travel stress, a traveler's lack of trust that the airlines and airports will ensure his or her comfort and safety. According to Rotter (1967), trust is an individual's characteristic belief in the sincerity, benevolence, or truthfulness of others. Trust has been associated with lower levels of competitiveness, envy, resentfulness, and vindictiveness and a lack of feelings toward others (Gurtman, 1992). Trust has been studied within the context of close relationships (see, e.g., Rempel, Ross, & Holmes, 2001; Wieselquist, Rusbult, Foster, & Agnew, 1999). In addition, trust has been studied by organizational/behavioral researchers who are interested in understanding what factors may influence customer satisfaction and loyalty (for a review, see Buttle & Burton, 2002). Anecdotal evidence indicates that the strength of frequent air travelers' loyalty to specific airlines may be becoming an increasingly important concern (Sharkey, 2005).

As this study suggests, trust has important relevance in the context of air travel: A person who believes that an airline cannot be trusted to ensure his or her comfort and security could reasonably experience distress while taking a commercial airplane flight. A passenger's trust of airlines and airports is important, because ultimately his or her safety is in their hands. Therefore, it might be valuable for future research to focus on understanding the factors that might influence travelers' trust of airlines and airports.

#### *Air Travel Stress May Be Multidimensional*

The results suggest that air travel stress has unique emotional components. These results do not support Watson and Clark's (1984) argument that self-report stress measures simply reflect a single underlying negative affect construct. Studies 1 and 2 provide evidence that the air travel anger and air travel anxiety components are separate constructs. Moreover, Study 3 suggests that most of the variance shared between the ATSS and the other individual-differences measures could not be explained by negative affectivity. These results are consistent with prior investigations showing that negative affectivity may not adequately explain the shared variance among self-report measures of affect (see, e.g., Kluger, Lewinsohn, & Aiello, 1994). One possible implication is that the people who experience air travel stress are not simply those individuals who are high in negative affect. By contrast, the data suggest that air travel may elicit distinct emotional reactions from a variety of travelers.

The idea that air travel stress is a multidimensional construct has implications for whether the Combined Anxiety/Anger factor should be considered a component of the ATSS. Sarason and Sarason (1990) have argued that because there are various components of a test anxiety scale, it is logical to make comparisons among them concerning their predictive value, as opposed to treating the measure as one global test anxiety scale. The same could be said of the Combined Anxiety/Anger factor. Although the Combined Anxiety/Anger factor had good internal and test-retest reliability, a number of results suggest that this factor should be divided into two factors, namely, Air Travel Anxiety and Air Travel Anger. For example, the exploratory factor analysis showed that the items of the Combined Anxiety/Anger factor had lower factor loadings and explained less of the total variance than the Air Travel Anxiety and Air Travel Anger factors combined. Overall, the findings support the recommendation that Air Travel Anxiety and Air Travel Anger should be separate factors.

#### *Convergent and Discriminant Validity*

The ATSS factors' correlations with measures of a variety of constructs suggest evidence for convergent validity of the ATSS. For example, the Air Travel Anxiety and Air Travel Anger components were most correlated with measures of conceptually similar constructs, including fear of flying and driving anger.

There is also evidence for the discriminant validity of the ATSS. The data support the hypothesis that air travel stress is substantially independent of other kinds of stress. For example, the correlations in Study 3 suggest that the ATSS factors had a small to moderate relation with negative life event stress and recent hassles. One implication is that a person who experiences high levels of air travel stress may not necessarily experience stress in general. An

important practical implication is that to reduce a person's air travel stress it may not be necessary to intervene on that individual's general tendency to experience stress. Instead, an intervention could focus on the air travel context. Similarly, the modest correlations between air travel stress and driving anger suggest that the stress reactions to air travel may be distinct from the stress reactions to other common forms of travel, such as the automobile. These results are consistent with Sarason's (1975) argument that certain types of anxiety can exist independently of other types of anxiety. The results also suggest that a richer understanding of stress reactions may necessitate their determination in specific classes of situations.

### Limitations

One limitation of the studies is that all of the data were correlational, thus preventing any causal interpretations from being drawn. Second, because all of the data were self-report, there was no external validation. Future research should consider further validating the ATSS by correlating it with physiological measures of stress (e.g., galvanic skin response) or behavioral observations of ATSS respondents who are taking an airplane flight. Moreover, people may misreport their anxiety, anger, and trust—perhaps to present themselves in a socially desirable way. This possibility is not too likely in this case because the correlation between the ATSS and social desirability was low.

Also, the Internet-based Samples B and C may limit the generalizability of the findings. First, it was not possible to determine the response rate of these samples. Participants might have been highly self-selected. Moreover, Internet access is greater among several demographic groups, especially younger people and those with higher income (Dillman, 2000). However, a recent survey indicates that 56% of the U.S. population uses the Internet (Victory & Cooper, 2001). Furthermore, the age, ethnicity, and air travel patterns of the Internet-based sample were similar to those found in other samples of air travelers. Moreover, the substantial percentage of less educated individuals in the Internet-based samples may contribute to the generalizability of the results, as a substantial portion of air travelers probably have a high school or less education (e.g., compare Sample A with Sample B in Table 2). More pertinent, Internet usage among air travelers is high: Eighty-five percent of air travelers surveyed at the Seattle–Tacoma International Airport (Sample E) reported that they had used the World Wide Web within the past 30 days. To the extent that air travelers were able to participate in this study because they had access to the Internet, this article's Internet-based samples may generalize to most air travelers.

### Future Research

Four main directions for future research using the ATSS are relevant to counseling psychologists and a wide range of other researchers. First, additional ATSS psychometric validation research could be conducted to help overcome the above-mentioned limitations of the studies reported here. Second, future research could refine the ATSS by adding more measures of the cognitive, emotional, and somatic aspects of air travel stress. Third, research could examine important basic empirical questions regarding air travel stress. For example, future criterion validity studies could

examine whether the tendency to experience air travel stress longitudinally predicts an individual's stress reactions in actual flight situations or whether it predicts flying behaviors, such as whether a person will fly or how often a person flies. In addition, future studies could examine whether air travel stress levels differ according to various personality characteristics (e.g., low vs. high trait anger and anxiety), demographic characteristics (e.g., age, gender), and air travel patterns (e.g., flying for business vs. pleasure). It is of interest to understand how airline/airport trust fits within a larger conceptual context, by, for example, examining the extent to which one's general tendency to trust others is related to airline/airport trust. Finally, future research should explore whether air travel stress is best conceptualized as a state, a trait, or a complex interaction among stable individual characteristics and the changing states of air travel environments.

Fourth, future research on the ATSS in air travel stress management would be valuable at the individual as well as at the population level. At the individual level, future research could explore the utility of the ATSS for helping individuals learn the components of air travel stress specific to them. As analogous to the treatments for driving anger (Deffenbacher et al., 2000), counseling psychologists could provide simple, component-specific interventions that briefly teach skills and coping strategies for managing the components of air travel stress that are specific to them. Given that active coping and positive reframing were each associated with lower levels of Air Travel Anger and Air Travel Anxiety, counseling psychologists could teach such adaptive coping strategies to their clients who experience air travel stress. Such interventions could be especially valuable to counseling psychologists treating individuals with flying phobias, driving anger, and/or work-related stress. Effects of such brief interventions might also be assessed with the ATSS. Given the early and growing awareness of air travel stress, counseling psychologists interested in prevention might develop and test interventions to enhance awareness of air travel stress and increase motivation to seek brief interventions. Such readiness enhancement interventions might include exploration of consequences of air travel stress for individuals who fly. In addition, at the population level, the ATSS could be used to identify the components of air travel stress that most air travelers experience. The results of this research might be used on a population level in that they might, for example, lead to the development of brief videos played at airport lounges that outline the stresses of air travel and simple ways to better cope with them.

In summary, these studies report on a measure of air travel stress, identify its three components, show that these components can be assessed reliably, and provide evidence for the discriminant and convergent validity of these components. These components showed a meaningful pattern of associations with measures of constructs including fear of flying, driving anger, and recent hassles. The ATSS is a potentially useful instrument in air travel stress research.

### References

- Aldwin, C. M. (1994). *Stress, coping, and development: An integrative perspective*. New York: Guilford Press.
- Arrindell, W. A., & Van der Ende, J. (1985). An empirical test of the utility of the observations-to-variables ratio in factor and components analysis. *Applied Psychological Measurement, 9*, 165–178.



- Aspinwall, L. G., & Taylor, S. E. (1992). Modeling cognitive adaptation: A longitudinal investigation of the impact of individual differences and coping on college adjustment and performance. *Journal of Personality and Social Psychology, 63*, 989–1003.
- Barefoot, J., Siegler, I., Nowlin, J., Peterson, B., Haney, T., & Williams, R. (1987). Suspiciousness, health, and mortality: A follow-up study of 500 older adults. *Psychosomatic Medicine, 49*, 450–457.
- Barlow, D. H. (1988). *Anxiety and its disorders*. New York: Guilford Press.
- Barlow, D. H. (1991). Disorders of emotion. *Psychological Inquiry, 2*, 58–71.
- Bentler, P. M. (1990). Comparative fit indices in structural models. *Psychological Bulletin, 107*, 238–246.
- Bentler, P. M. (1995). *EQS structural equations program manual*. Encino, CA: Multivariate Software.
- Bolger, N., & Zuckerman, A. (1995). A framework for studying personality in the stress process. *Journal of Personality and Social Psychology, 69*, 890–902.
- Bor, R., Parker, J., & Papadopoulos, L. (2001). Brief, solution-focused initial treatment sessions for clients with a fear of flying. *Counselling Psychology Review, 16*, 32–40.
- Bruning, J. L., & Kintz, B. L. (1997). *Computational handbook of statistics* (4th ed.). Glenview, IL: Foresman.
- Bureau of Transportation Statistics. (2004). Form 41, T-100 market, on-flight passengers transported for 2003 and 2004. In *Transtats: The intermodal transportation database*. Retrieved on September 7, 2005, from <http://www.transtats.bts.gov>
- Burks, N., & Martin, B. (1985). Everyday problems and life change events: Ongoing versus acute sources of stress. *Journal of Human Stress, 11*, 27–35.
- Buttle, F., & Burton, J. (2002). Does service failure influence customer loyalty? *Journal of Consumer Behaviour, 1*, 217–227.
- Carver, C. S., Pozo, C., Harris, S. D., Noriega, V., Scheier, M. F., Robinson, D. S., et al. (1993). How coping mediates the effect of optimism on distress: A study of women with early stage breast cancer. *Journal of Personality and Social Psychology, 65*, 375–390.
- Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control theory approach to human behavior*. New York: Springer-Verlag.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*, 267–283.
- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate and Behavioural Research, 1*, 245–276.
- Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment, 6*, 284–290.
- Cohen, J. (1988). *Statistical power analysis* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Cook, W. W., & Medley, D. M. (1954). Proposed hostility and pharisaic-virtue scales for the MMPI. *Journal of Applied Psychology, 38*, 414–418.
- Craske, M. G. (1991). Phobic fear and panic attacks: The same emotional states triggered by different cues? *Clinical Psychology Review, 11*, 599–620.
- Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin, 52*, 281–302.
- Crowded skies are here again. (2004, January 23). *New York Times*, A22.
- Deffenbacher, J. L., Filetti, L. B., Richards, T. L., Lynch, R. S., & Oetting, E. R. (2003). Characteristics of two groups of angry drivers. *Journal of Counseling Psychology, 50*, 123–132.
- Deffenbacher, J. L., Huff, M. E., Lynch, R. S., Oetting, E. R., & Salvatore, N. F. (2000). Characteristics and treatment of high-anger drivers. *Journal of Counseling Psychology, 47*, 5–17.
- Deffenbacher, J. L., Oetting, E. R., & Lynch, R. S. (1994). Development of a driving anger scale. *Psychological Reports, 74*, 83–91.
- Dillman, D. A. (2000). *Mail and Internet surveys: The tailored design method*. New York: Wiley.
- Edwards, A. L. (1970). *The measurement of personality traits by scales and inventories*. Oxford, England: Holt, Rinehart, & Winston.
- Ewart, C. K., & Suchday, S. (2002). Discovering how urban poverty and violence affect health: Development and validation of a neighborhood stress index. *Health Psychology, 21*, 254–262.
- Eysenck, H. J. (1967). *The biological basis of personality*. Springfield, IL: Thomas.
- Eysenck, M. W. (1981). Learning, memory and personality. In H. J. Eysenck (Ed.), *A model for personality* (pp. 169–209). Berlin, Germany: Springer-Verlag.
- Felner, R. S., Rowlinson, R. T., & Terre, L. (1986). Unraveling the Gordian Knot in life change inquiry: A critical examination of crisis, stress, and transitional frameworks for prevention. In S. M. Auerbach & A. L. Stolberg (Eds.), *Crisis intervention with children and families [Series in clinical and community psychology]* (pp. 39–63). Washington, DC: Hemisphere Publishing.
- Floyd, F. J., & Widman, K. F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment, 7*, 286–299.
- Gurtman, M. B. (1992). Trust, distrust, and interpersonal problems: A circumplex analysis. *Journal of Personality and Social Psychology, 62*, 989–1002.
- International Air Transport Association. (2002). *Global airport monitor*, Montreal, Quebec, Canada: IATA Aviation Information Research.
- International Civil Aviation Organization. (2004). *Annual reports of the council*. Montreal, Quebec, Canada: Author.
- International Civil Aviation Organization. (2003). *Annual reports of the council: Vol. 3. 2000–2002*. Montreal, Quebec, Canada: Author.
- Jay, M., & John, O. P. (2004). A depressive symptom scale for the California Psychological Inventory: Construct validation of the CPI-D. *Psychological Assessment, 16*, 299–309.
- Jöreskog, K. G., & Sörbom, D. (1984). *LISREL VI: Analysis of linear structural relationships by maximum likelihood, instrumental variables, and least squares methods* (3rd ed.). Mooresville, IN: Scientific Software.
- Kanner, A. D., Coyne, J. C., Schaefer, C., & Lazarus, R. S. (1981). Comparison of two modes of stress measurement: Daily hassles and uplifts versus major life events. *Journal of Behavioral Medicine, 4*, 1–39.
- Kline, R. B. (1998). *Principles and practice of structural equation modeling*. New York: Guilford Press.
- Kluger, A. N., Lewinsohn, S., & Aiello, J. (1994). The influence of feedback on mood: Linear effects on pleasantness and curvilinear effects on arousal. *Organizational Behavior and Human Decision Processes, 60*, 276–299.
- Kohn, P. M., Lafreniere, K., & Gurevich, M. (1991). Hassles, health, and personality. *Journal of Personality and Social Psychology, 61*, 478–482.
- Kohn, P. M., & Macdonald, J. E. (1992). The Survey of Recent Life Experiences: A decontaminated hassles scale for adults. *Journal of Behavioral Medicine, 15*, 221–236.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Lee, H. B., & Comrey, A. L. (1979). Distortions in a commonly used factor analytic procedure. *Multivariate Behavioral Research, 14*, 301–321.
- MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods, 4*, 84–99.
- Marco, C. A., & Suls, J. (1993). Daily stress and the trajectory of mood: Spillover, response assimilation, contrast, and chronic negative affectivity. *Journal of Personality and Social Psychology, 64*, 1053–1063.

- Nunnally, J. C. (1978). *Psychometric theory*. New York: McGraw-Hill.
- Portello, J. Y., & Long, B. C. (2001). Appraisals and coping with workplace interpersonal stress: A model for women managers. *Journal of Counseling Psychology, 48*, 144–156.
- Rayner, R. (1998, March 8). Nowhere, U. S. A. *New York Times Magazine*, Section 6, 42–46.
- Rempel, J. K., Ross, M., & Holmes, J. G. (2001). Trust and communicated attributions in close relationships. *Journal of Personality and Social Psychology, 81*, 57–64.
- Reynolds, W. M. (1982). Development of reliable and valid short forms of the Marlowe–Crowne Social Desirability Scale. *Journal of Clinical Psychology, 38*, 119–125.
- Rotter, J. B. (1967). A new scale for the measurement of interpersonal trust. *Journal of Personality, 35*, 651–665.
- Ruehlman, L. S., Lanyon, R. I., & Karoly, P. R. (1999). Development and validation of the Multidimensional Health Profile: Part I. Psychosocial functioning. *Psychological Assessment, 11*, 166–176.
- Sarason, I. G. (1975). Test anxiety, attention, and the general problem of anxiety. In C. D. Spielberger & I. G. Sarason (Eds.), *Stress and anxiety* (Vol. 1, pp. 165–187). Washington, DC: Hemisphere.
- Sarason, I. G., Johnson, J. H., & Siegel, J. M. (1978). Assessing the impact of life changes: Development of the life experiences survey. *Journal of Consulting and Clinical Psychology, 46*, 932–946.
- Sarason, I. G., & Sarason, B. R. (1990). Test anxiety. In H. Leitenberg (Ed.), *Handbook of social and evaluation anxiety* (pp. 475–495). New York: Plenum Press.
- Scheff, T. J. (1979). *Catharsis in healing, ritual and drama*. Berkeley: University of California.
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology, 4*, 219–247.
- Scheier, M. F., & Carver, C. S. (1992). Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Theory and Research, 16*, 201–228.
- Sharkey, J. (2000, January 12). Business travel: On the road; Try to relax. At least two psychologists are paying attention to stress from life on the road. *New York Times*, C8.
- Sharkey, J. (2005, January 11). Business travel: On the road; For elite-status flyers, loyalty is a two-way street. *New York Times*, C6.
- Shullman, S. L. (2002). Reflections of a consulting counseling psychologist: Implications for the principles for education and training at the doctoral and postdoctoral level in consulting psychology for the practice of counseling psychology. *Consulting Psychology Journal: Practice and Research, 54*, 242–251.
- Spielberger, C. D. (1983). *Manual for the State–Trait Anxiety Inventory (STAI)*. Palo Alto, CA: Consulting Psychologists Press.
- Spielberger, C. D. (1988). *State–Trait Anger Expression Inventory: Research edition*. Lutz, FL: Psychological Assessment Resources.
- Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1970). *Test manual for the State–Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Spielberger, C. D., Johnson, E. H., Russel, S. F., Crane, R. J., Jacobs, G. A., & Wordon, R. J. (1985). The experience and expression of anger. In M. A. Chesney, S. E. Goldston, & R. H. Rosenman (Eds.), *Anger and hostility in behavioral medicine* (pp. 5–30). New York: Hemisphere/McGraw-Hill.
- Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.). New York: HarperCollins.
- Tache, J., & Selye, H. (1985). On stress and coping mechanisms. *Issues in Mental Health Nursing, 7*, 3–24.
- Trucco, T. (2003, December 21). Travel advisory: Survey finds rudeness a problem for travelers. *New York Times*, Section 5, 3.
- Van Gerwen, L. J., Spinhoven, P., Van Dyck, R., & Diekstra, R. F. W. (1999). Construction and psychometric characteristics of two self-report questionnaires for the assessment of fear of flying. *Psychological Assessment, 11*, 146–158.
- Victory, N. J., & Cooper, K. B. (2001). *A nation online: How Americans are expanding their use of the Internet*. Washington, DC: U.S. Department of Commerce.
- Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin, 96*, 465–490.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063–1070.
- Weinberger, M., Hiner, S. L., & Tierney, W. M. (1987). In support of hassles as a measure of stress in predicting health outcomes. *Journal of Behavioral Medicine, 10*, 19–31.
- Wieselquist, J., Rusbult, C. E., Foster, C. A., & Agnew, C. R. (1999). Commitment, pro-relationship behavior, and trust in close relationships. *Journal of Personality and Social Psychology, 77*, 942–966.
- Zoglin, R., & Donnelly, S. B. (2002). The nation's best run airport—and why it's still not good enough. *TIME Magazine, 160*(3), 46–52.

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