Validating the Adult Playfulness Trait Scale (APTS)

An Examination of Personality, Behavior, Attitude, and Perception in the Nomological Network of Playfulness

Xiangyou Sharon Shen
Garry Chick
Harry Zinn

The authors discuss the Adult Playfulness Trait Scale (APTS), a measurement that they developed along with a conceptualization of playfulness based on a synthesis of personality research and play literature. They assert the research they conducted, which examined the nomological network of playfulness and involved relevant constructs of personality (self as entertainment), behavior (playing), attitude (goal attainment), and perception (leisure boredom), empirically validates the APTS. They present data from two studies to show correlations between the APTS and measures of theoretically related constructs to support their claims. In particular, they use results from known-group comparisons to illustrate that the APTS can successfully and effectively distinguish individuals with different levels of playfulness. They hope thereby not only to establish the validity of the APTS but to encourage its wider application in research on play. **Key words:** Adult Playfulness Trait Scale; APTS; nomological network of playfulness; personality research; play; playfulness; play research; reliability studies; validating research instruments

We have developed the Adult Playfulness Trait Scale (APTS), a new measurement of playfulness that assesses an individual's disposition for uninhibited and spontaneous fun. We base our theory for the APTS on a new, integrated review of three major paradigms of personality research, namely the trait approach, social-cognitive theories, and the interactionist approach. We propose that, instead of considering traits as both internal psychological qualities and phenotypic states (i.e., the summary view of traits), we should focus on the internal dispositional qualities and strictly distinguish these from corresponding overt behavioral manifestations (i.e., a latent dispositional view of traits; Shen, Chick, and Zinn 2014).

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Contact Xiangyou Sharon Shen at sshenpsu@gmail.com

The summary view dominates the development of many trait inventories, including most playfulness studies (Barnett 1990; Glynn and Webster 1992, 1993; Lieberman 1977). Despite its popularity, the summary-trait concept lends itself to circular reasoning, especially when researchers use it to explain behavior, as we discuss in our review of the literature. The missing distinction between internal qualities and external state manifestations also commonly causes a "conflating" of "characteristics of playful behavior with dispositional qualities of the player" in playfulness research (Shen, Chick, and Zinn 2014). By contrast, the latent-disposition view avoids such circular reasoning by excluding the behavioral component from the trait conceptualization, making it theoretically tenable both to examine the relationship between the trait and behavior and to introduce a third component—situations—critical to studying trait-environment interaction in producing behaviors (i.e., the interactionist approach, Bowers 1973; Lewin 1936; Magnusson 1999)

We derive the other important tenet of the theoretical framework for APTS from the network view emphasized by social-cognitive theories (Cervone and Shoda 1999, Mischel and Shoda 1995, 1998). Shen, Chick, and Zinn (2014) propose that, instead of an individual, nonreducible quality, a trait can be more appropriately considered a unique combination of interrelated cognitive qualities, qualities that often function together to drive a particualr type of behavior. This view acknowledges that a trait can often be multifaceted yet remain itself distinctively a trait.

These two ideas define the latent-network trait conceptualization that guided the development of our concept and measuring instrument. Based on an extensive review of the literature, we proposed a hierarchical conceptual model of playfulness consisting of three levels and several subdimensions (figure 1). We then employed a multistudy, multimethod design to develop, refine, and validate a self-report measurement. APTS, the final instrument, consists of nineteen items and three subscales, each designed to measure one of the three cognitive qualities essential to playfulness. These are a strong motivation to seek fun, an ability to negotiate constraints that leads to a free mental state, and a mental propensity to respond promptly with little premeditation. Of the three—fun seeking motivation, uninhibitedness, and spontaneity—the fun-seeking subscale contains yet another three subdimensions: fun belief (believing in the value of fun in life), initiative (actively creating fun activities), and reactivity (being responsive to fun stimuli).

We argue that the latent-network trait conceptualization of playfulness

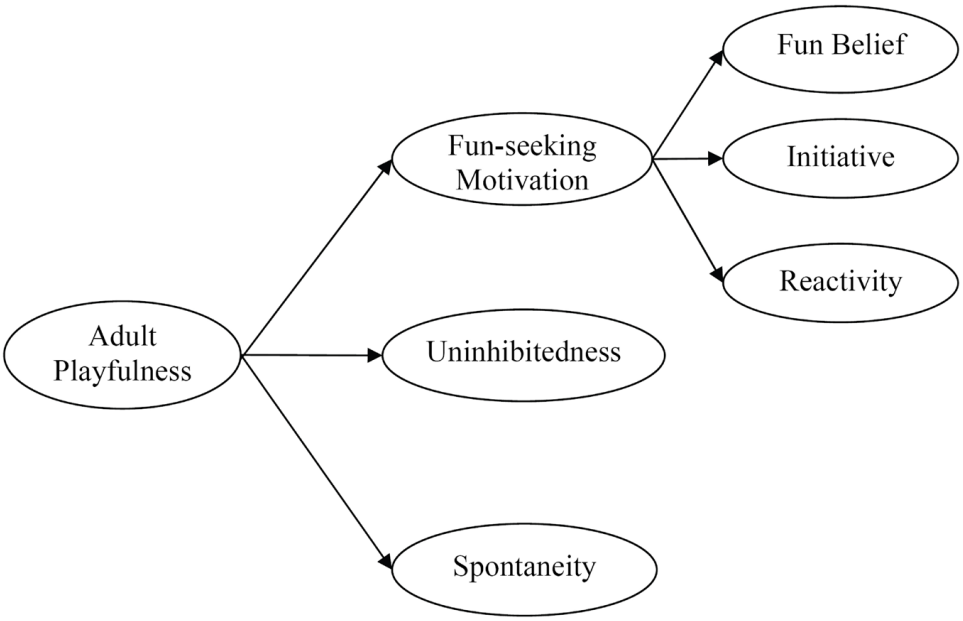

Figure 1. Hierarchical APTS conceptual model (Shen, Chick, and Zinn 2014)

and the APTS can be readily incorporated into the interactive framework of playfulness research, allowing researchers to move beyond descriptive studies by examining how a playful trait interacts with the environment and its corresponding behavioral, emotional, and health consequences.

Compared to existing adult playfulness measures (Glynn and Webster 1992, 1993; Schaefer and Greenberg 1997; O'Connell et al. 2000), which share a weak theoretical basis and a dubious construct validity (for a detailed review, refer to Shen 2010 and Shen, Chick, and Zinn 2014), the APTS is theory driven and enjoys initial corroborative evidence for reliability and translation validity (i.e., the extent to which the conceptual model faithfully translates into the measurement, including three main aspects: face validity, content validity, and structure validity). We have reported good internal consistency for the APTS (Cronbach's $\alpha = .87$) and its subscales (Cronbach's $\alpha = .68$ - $.87$). The APTS's face validity (i.e., the extent to which each item appears to assess the construct that it purports to measure) and content validity (i.e., the extent to which each subset of items has adequate breadth to ensure proper coverage of the corresponding

construct's content domain) were established through external expert review and independent conceptual back translation (a procedure wherein independent judges assign test items back to the conceptual category they purport to assess). We confirmed the scale's structure validity (i.e., the extent to which the measurement structure reflects the proposed construct structure, including the number of subdimensions and relations among them) using higher-order factor analyses, which supported our propositions about the interconnectedness of subdimensions, about the existence of an overarching playfulness factor, and about the use of the APTS as a one-dimensional scale (Shen, Chick, and Zinn 2014).

In this article, we extend the validation of the APTS by providing evidence for its predictive validity, concurrent validity, and convergent validity. Specifically, we assess its predictive validity—the extent to which the measure predicts or correlate with proposed consequences—by testing if playfulness as measured by the APTS possitively correlates with the average tendancy to engage in playful behavoir. We evaluate concurrent validity—the extent to which the measure of interest correlates with theoretically (but not causally) related measures assessed simultaneously—by examining whether the APTS correlates with the self-as-entertainment measure (Mannell 1984, 1999) in a manner we hypothesize. We examine convergent validity—the extent to which the measure of interest correlates with alternative measures of the construct—by testing whether APTS scores positively correlate with independent global measures of playfulness and whether APTS scores are consistent with the known levels of playfulness of criterion groups.

Since the three APTS subscales can also be used separately, we provide initial validation of these subscales as well. In particular, we tap into the relatively rich literature on intrinsic motivation and examine the predictive validity and concurrent validity of the fun-seeking motivation subscale by looking at its relationship to the goal-attaining attitude and leisure boredom perceptions. Moreover, we examine the convergent validity of all three APTS subscales through criterion groups and corresponding global measures.

Literature Review

Examining constructs theoretically related to playfulness can sharpen our understanding of the concept and help develop a theory-based, nomological network that we can test in the APTS validation. Researchers have associated a number of

constructs with playfulness, including humor (Schaefer and Greenberg 1997), imagination (Bundy 1993 1997), personal orderliness (Glynn and Wester 1992), flow (Csikszentmihalyi 1981; Woszczynski, Roth, and Segars 2002), a penchant for instrumentality and expressiveness (Coleman 2009), aspirations for both intrinsic and extrinsic goals (Proyer 2012), an overall sense of well-being (Yessick 1990), the Big Five personality traits (Alexandra 2009; FitzMedrud 2008; Woszczynski, Roth, and Segars 2002), and a variety of individual attributes such as intelligence, activeness, aggressiveness, cheerfulness, confidence, curiosity, independence, mischievousness, a sense of responsiblility, outgoingness, sociability, and a preference for leisure activities (Barnett, 1991 2007, 2011). Several functional studies of adult playfulness have linked the trait with workplace-related variables including the nature of field of work in terms of qualitative, like liberal arts, versus quantitative, like economics (Glynn and Webster 1992); sales representatives' adaptive selling, job satisfaction, and sales performance (Maxwell et al. 2005); microcomputer training performance (Martocchio and Webster 1992); task evaluation, task perceptions, task involvement, and task performance (Glynn and Webster 1992); and worker's job satisfaction and performance in a range of fields such as art and media, education, hi-tech, and agriculture (Yu et al. 2007).

Here we focus on several personality, behavioral, perceptual, and attitudinal correlates of playfulness and its subdimensions, particularly psychological constructs that are of particular interest in leisure studies, such as self-as-entertainment (Mannell 1984) and leisure boredom (Iso-Ahola and Weisinger 1990).

Playfulness and Playful Behavior

We developed the APTS with the idea that playfulness is the internal disposition or mental propensity to engage in playful behavior (Shen, Chick, and Zinn 2014). This view defines traits strictly as latent dispositions that "initiate and guide behavior" (Allport 1961, 373). This view contrasts with the summary view of traits, which defines them as the sum of thoughts, behavior, and affects. As we have pointed out, the summary approach invokes circular reasoning by explaining behavior using a construct containing a behavioral component (Cervone and Mischel 2002; Cervone, Shadel, and Jencius 2001; Harré 1998). By explicitly excluding the behavioral component from the concept of traits, the latent-network trait concept makes examining the relationship between the trait

and behavior possible. Such research views momentary playful behavior as the manifestation of the playful trait interacting with situational specifics. Although behavioral variations created by contextual changes render a perfect one-to-one trait-behavior relationship impossible (e.g., an individual with a strong playful trait does not always exhibit very playful behavior in every situation), the relatively stable property of a trait expresses itself with a certain degree of consistency in trait-relevant behavior across situations and over time. Accordingly, we expect that more playful people on average will report a greater tendency to engage in playful behavior. If the APTS offers a valid measure of the playful trait, an individual's APTS scores should positively correlate with his average tendency to engage in playful behavior (Hypothesis 1). We consider playful behavior to be the behavioral consequence of playfulness. This part of our test provides evidence for the APTS' predictive validity.

Playfulness and Self-as-Entertainment

Mannell (1984) developed the self-as-entertainment (SAE) construct to characterize individual differences in the ability to fill free time with personally satisfying mental, physical, or social activities. Mannell identified three aspects of SAE: mind-play mode, referring to one's capacity to turn inward and use imagination and fantasy to fill his or her free time; environmental mode, the capacity to seek external resources (e.g., resources from the physical and social environment) to create interesting and enjoyable pursuits during free time; and self mode, the physical and cognitive skills and ability to find or create challenging and interesting pursuits during free time.

SAE and playfulness share a focus on individual differences in the tendency to entertain the self. Few researchers have examined empirically the direct relationship between the two constructs. Several studies, however, have reported a positive relationship between SAE and intrinsic motivation (Ellis and Yessick 1989; Hoff and Ellis 1992; Morris 1992, cited in Weissinger and Bandalos 1995), with the latter considered a defining characteristic of playfulness. A closer look at the two constructs suggests three distinctions. SAE, while interacting with many life circumstances (Mannell 1999), primarily concerns the use of free time. Most conceive playfulness, on the other hand, as a permeating personality trait that functions across the boundary of free time, work, and nonwork obligations. SAE addresses the overall ability to entertain the self (including mindfully initiating activities to have a good time), but playfulness predominantly drives spontaneous behavior. SAE places an explicit focus on leisure aptitude

(i.e., one's ability to entertain oneself), which is a related but not necessary component of playfulness (Shen 2010). Based on this analyses, we deduct that playfulness and SAE only partially overlap. If the APTS offers a valid measure of adult playfulness, we expect to see a positive and small to moderate relationship between the APTS and the SAE measure (Hypothesis 2). We consider SAE to be a theoretically related construct. This part of our test provides evidence for the APTS' concurrent validity.

Playfulness and Goal Attainment

Harris (1981), among others (Ellis 1973; Huizinga 1955; Sutton-Smith 1977), elaborated on the lack of concern for reaching goals in playful individuals. In particular, he pointed out that though players can momentarily be intensely goal directed, a truly playful mind pursues only the goals that facilitate the enjoyment of the process rather than those that define consequences beyond the process. The distinction between internal and external goals is a critical one here. Internal goals—which constitute a part of play (e.g., shooting the ball into one's own team's hoop in basketball games) and which all players often pursue—serve to enhance the enjoyment of the activity by engaging the participants at their highest performance level (Apter 1991). External goals, designed to influence play from outside (e.g., a monetary reward for winning or punishment for losing), often alienate players from the process of playing by superseding their intrinsic motivation or inducing anxiety that interferes with their sense of freedom. The notion of a low commitment to attaining goals in playful individuals elaborated by Harris and other authors specifically refers to the attitude toward attaining external goals. Unlike past research that focused on how goal attainment relates to playfulness in general, we think this attitudinal construct is most aligned with the intrinsically motivated aspect of playfulness, which by definition concerns the tendency to focus on the process rather than end results (Shen, Chick, and Zinn 2014).

Our argument is in line with Apter's (1991) proposition about goal attainment in competitive games. Apter suggests that in sports (and other competitive games), although winning provides extra pleasure and players naturally prefer it, intrinsically motivated players do not feel their time has been wasted if they lose. On the other hand, thinking that a game is not worth playing if one loses implies a serious telic frame of mind. In other words, intrinsic motivation relates negatively to goal attainment. Given this, we hypothesize that, if the fun-seeking motivation subscale provides a valid measure of intrinsic motivation, we should

see a negative correlation between this subscale and measures of goal attainment (Hypothesis 3). We consider the goal-attaining attitude as a theoretically related construct. This part of our test should provide evidence for the concurrent validity of the fun-seeking motivation subscale.

We found no empirical studies examining the direct relationship between goal attainment and playfulness. We think it hard to assume a clear position here because we do not know how—or if—goal attainment relates to other aspects of playfulness. We do not know, for example, whether a spontaneous person will necessarily focus more or less on external goals during play. The same goes for uninhibitedness. In light of this, we have not formed any specific hypothesis about the relationship between goal attainment and playfulness. Instead, we offer supplemental analyses to explore how goal attainment relates to various subdimensions of playfulness as well as playfulness as a whole.

Playfulness and Leisure Boredom

Boredom has been defined as "a state of low arousal and dissatisfaction" (Mikulas and Vodanovich 1993, 1) due to inadequate stimulation from the environment (Vodanovich 2003) or to participation in subjectively monotonous, repetitive activities (Hill and Perkins 1985). The concept of leisure boredom addresses boredom in the use of free time and perception (Barnett 2005; Caldwell et al. 1999; Weissinger, Caldwell, and Bandalos 1992).

Leisure boredom has been conceived as both an internal disposition, for example, the concept of chronic boredom (Iso-Ahola and Weissinger 1990), and as a perceptual response to environment, for example, the concept of response boredom. Although empirical evidence exists for tentatively distinguishing differences in individual perceptions of leisure boredom, the disposition of the qualities underlying leisure boredom remain unclear. Most empirical studies consider leisure boredom to be a result of perceived unfulfilled free time that develops in reaction to task-specific situations.

Past research reported a significant negative relationship between leisure boredom and intrinsic motivation (e.g., Iso-Ahola and Weissinger 1987, 1990). Weissinger, Caldwell, and Bandalos (1992), for instance, suggest that individuals with preference for intrinsic motivation in leisure behavior are less likely to become bored in leisure time.

Few empirical studies have examined the relationship between playfulness and leisure boredom. Some researchers argue that playfulness might help reduce boredom because more playful people tend to engage in play more often, which

may function as a coping mechanism in the face of boredom (Bowman 1987). This seemingly plausible argument invites more questions than it answers: do people feel bored first then turn to play as a form of coping (i.e., the more frequently people perceive boredom, the more often they play, which implies a positive relationship; Linda L. Caldwell, pers. comm.) or do they play first and feel less bored as a result (i.e., the more people play, the less bored they feel, which implies a negative relationship)? On the other hand, although there is an obvious link between the two constructs through their relationship with intrinsic motivation, we think it is difficult to conjecture the exact nature of this relationship due to the lack of knowledge about how free-time boredom relates to the spontaneous and uninhibited aspects of playfulness. Moreover, research about the possible sources of increased boredom points to poor time structure and organization (Vodanovich and Watt 1999), and little is known about how playful people engage in different time-use patterns compared to their less playful counterparts.

In light of the above review, we hypothesize, consistent with past findings, that if our fun-seeking motivation scale offers a valid measure of intrinsic motivation, we should observe a negative relationship between this subscale and leisure boredom (Hypothesis 4). We will also conduct supplementary analyses to explore how leisure boredom relates to the other two subdimensions of playfulness and playfulness as a whole.

Alternative Measures of Adult Playfulness

Researchers often use alternative instruments when examining a new measure's convergent validity that is supported when the ratings on the new measure match those of an established one. This method, however, requires that the established measure itself be valid. "If the benchmark is invalid, then it is of little value in assessing the new measure" (De Vaus 2001, 29). We identify three existing measures of adult playfulness: the Adult Playfulness Scale or APS (Glynn and Webster 1992); the Playfulness Scale for Adults or PSA (Shaefer and Greenberg 1997); and the Playfulness Scale or PS (O'Connell et al. 2000). Our review suggests that the construct validity of these three measures remains unclear due to limited empirical validation (the PS), due to a questionable translation fidelity (the APS), or due to a relatively narrow conceptualization (the PSA; Shen, Chick, and Zinn 2014). Moreover, the value of published scale validation studies about the APS and PSA (Fix 2003; Fix and Schaefer 2005; Glynn and Webster 1992, 1993; Mitxer 2009) were compromised by their common problematic practice

of treating the multidimensional scales as one dimensional (Shen, Chick, and Zinn 2014).

Instead of using dubious existing measures of adult playfulness, we enlisted two alternative methods to assess the APTS's convergent validity. The first method involves constructing new single-item global measures of playfulness (e.g., "I am playful"). Compared to a multi-item composite index, single-item indicators may be less reliable, but they are relatively easy to construct and often intuitively meaningful (Vaske 2008). The second method uses criterion groups in a known-groups design, wherein groups with known different levels of the quality being assessed (i.e., the criterion groups) are rated with the new measure (Wegener and Fabrigar 2004). If these groups report significantly different scores on the new measure, the new measure's ability to successfully differentiate criterion groups is attested and we can be more confident about its validity (De Vaus 2001).

In this research, we employed both global measures of playfulness and criterion groups to verify the APTS's convergent validity. We hypothesize that the APTS scores positively correlate with global measures of playfulness (Hypothesis 5), and the APTS can effectively distinguish people known to be highly playful from those known to be less playful (Hypothesis 6-1). Moreover, if each subdimension included in our playfulness definition constitutes an essential, defining characteristic of the trait, then each corresponding APTS subscale should be able independently and effectively to distinguish individuals with different levels of playfulness (Hypothesis 6-2). In other words, since we claim spontaneity is a defining characteristic of playfulness, two individuals with very different levels of playfulness must also differ in their spontaneity. The same goes for other defining characteristics of playfulness.

Methods

We conducted two studies to collect validity evidence as specified in our review of the nomological network of playfulness.

Study 1

We designed Study 1 as a survey to collect empirical data for developing the APTS and examining the new scale's reliability, translation validity, and criterion validity. A total of 473 adults (average age = 40.7) participated in the survey. We

documented the details about the study sample and data-collection procedures in Shen, Chick, and Zinn (2014). Here, we wish to report the measures and data analyses relevant to examining the APTS's criterion validity, specifically, its predictive validity, concurrent validity, and convergent validity.

Measures

The APTS consists of nineteen items selected from seventy-three initial items and then thirty-two preliminary items through multiple steps of conceptual and empirical evaluation. Each item falls under one of the three subscales—fun-seeking motivation (nine items, including: "I think fun is a very important part in life," "I try to have fun no matter what I am doing," and "I appreciate fun things started by others"); uninhibitedness (five items, including "I don't always follow rules," and "Sometimes I can do things without worrying about consequences"); and spontaneity (five items, including "I often do unplanned things," and "I often act upon my impulses"). Fun-seeking motivation includes yet another three subdimensions, fun belief (two items), initiative (four items), and reactivity (three items). All items were randomly ordered and used seven-point Likert scales with all points labeled (1= "strongly disagree", 7= "strongly agree").

The average tendency to engage in playful behavior is assessed by five items derived from the literature, including: "I like to play in my mind," "I often do playful things when I am by myself," and "I often do playful things when I am with other people."

We assess SAE using the twenty-eight-item SAE scale (Mannell 1984). This instrument consists of three subscales: mind-play mode, assessed by five items (e.g., "I have an active imagination"); environmental mode, assessed by eight items ("I like to go places where there is lots to do"); and self mode, assessed by fourteen items ("I can make almost anything fun for myself").

We assess goal-attaining attitude using six items derived from the literature, including "I feel my time has been wasted if I lose," and "I feel a game is not worth playing if I cannot win it".

We measure leisure boredom using the six-item Boredom in Free Time Scale (BFTS, Caldwell, Smith, and Weissinger 1992), including "Free time is boring," and "For me, free time just drags on and on."

We include two global measures of playfulness (e.g., "I am a playful person" and "I am playful no matter where I am and who I am with").

For our theoretically related measures we use seven-point Likert scales (with the endpoints labeled as "strongly disagree" and "strongly agree"). To test

the potential social desirability biases of the APTS, we also included the Social Desirability Scale (SDS), more specifically, the ten-item short form SDS (Strahan and Gerbasi 1972). Fischer and Fick (1993) reported high internal consistency and strong correlations with the standard thirty-three-item Marlowe-Crowne SDS (Crowne and Marlowe 1960) for the short form SDS, with the latter considered a significant improvement over the original scale. A significantly high correlation between the APTS and the SDS would suggest a strong social desirability bias and the need to correct for this bias in subsequent data analyses. The short form SDS uses true/false response scales.

Data Analysis Strategies

Our initial inspection of the data suggested a relatively large number of missing responses (fifty-five or 11.6 percent to 166 or 35.0 percent missing values per variable) due to attrition effects. We handled missing data using multiple imputations (Rubin 1976, 1987) in SAS 9.2 (PROC MI procedure—imputed values generated with Markov chain Monte Carlo or MCMC method). This method is preferred when there is a large number of missing responses. Instead of filling in a single value for each missing value, it replaces each missing value with a set of plausible values that represent the uncertainty about the right value to impute, which in turn results in valid statistical inferences that properly reflect the uncertainty due to missing values (Rubin 1987). To ensure a high efficiency of estimation, we produced twenty imputed data sets (Graham, Olchowski, and Gilreath 2007).

We then analyzed the multiple imputed data sets using standard procedures for complete data (e.g., computing means and sums, analyzing correlations) and combined results using the PROC MIANALYSIS procedure in SAS 9.2.

We computed composite scores for all multi-item measures and used them in subsequent correlation analyses. Note that summing or averaging item scores across dimensions into a single composite score is inappropriate when a measure is multidimensional, which, if used in subsequent analyses (e.g., correlating with a criterion variable), may lead to ambiguous interpretation of the relationships among constructs (DeVellis 2003, Brown 2006). To decide whether each multi-item measure could be treated as one dimensional (therefore allowing us to compute a meaningful composite score), we performed pilot confirmatory factor analyses (CFA) in LISREL 8.72 on all multi-item measures, including higher-order factor analyses on measures with known subdimensions (i.e., the APTS, the SAE) to verify the existence of an overarching dimension. We confirmed

four measures to be one dimensional, for which we computed composite scores by averaging across all items: the nineteen-item APTS; the five-item average tendency to engage in playful behavior; the six-item goal-attainment measure; the nine-item fun-seeking motivation subscale; and the six-item BFTS scale. We also averaged the two global measures of playfulness to obtain a global playfulness composite score. We computed composite scores of social desirability by summing across the ten items of the short form SDS.

The CFA failed to confirm a general dimension overarching the three subscales of the twenty-eight-item SAE scale (the second-order SAE model was not identified). As a precaution, we treated the SAE scale as multidimensional (i.e., each dimension or subscale as a measure of a distinct construct) and computed separate composite scores for each SAE subscale by averaging across items within each subscale. In the subsequent correlational analyses, instead of examining how the APTS related to the SAE, we examined how the APTS related to each SAE subscale.

Finally, we conducted correlation analyses (using Pearson product-moment correlation coefficients) to examine the potential social desirability bias of the APTS and to show how the new measure related to those constructs we reviewed in the nomological network of adult playfulness (Hypotheses 1 to 5).

Study 2

We conducted the second study to provide additional evidence for the validity of the APTS by measuring the new scale's ability to differentiate criterion groups. We employed a known-group comparison design (Wegener and Fabrigar 2004), in which we first identified two groups of people known to differ in their playfulness, who then rated themselves with the APTS. We followed with statistical tests for mean differences across groups to determine whether the scores remained consistent with the known levels of playfulness in the criterion groups. We repeated the above tests for the three APTS subscales with the notion that if each subdimension included in our playfulness conceptualization indeed constitutes an essential, defining characteristic of playfulness, then each APTS subscale, when used independently, should also be able to effectively distinguish people with different levels of playfulness. We collected additional evidence to test the APTS's convergent validity using global measures of playfulness.

Procedures

We recruited two groups of participants in two separate solicitations published

on the news wire of a large institution in Northeastern United States. The first solicitation asked viewers to nominate a playful adult over eighteen years old they knew personally and to invite him or her to participate in an on-line survey (set up with SurveyMonkey providing the link in the solicitation). Our second solicitation, published two months later, called for nominations of least playful individuals. The most playful nominees, named in this article the high (H) playful group, and the least playful nominees, termed the low (L) playful group, accessed the same survey through different links, which allowed the web server to record their respective group memberships. Because lay people easily recognize playfulness (Ellis 1973), we believed that this method would prove reasonably reliable for identifying a priori two groups with distinct levels of playfulness.

Considering the possibility of self-referral, we designed a screening question at the beginning of the survey to identify and record participants' referral source (i.e., self or other people). Self-referred participants were offered the choice to exit or continue the survey after the screening question.

To determine the group sample size we needed to achieve adequate statistical power, we conducted a pilot power analysis using reference data from Study 1. We first sorted the respondents in the first study into the two groups based on their responses on a global playfulness question ("I am playful no matter where I am and who I am with"). Respondents whose overall playfulness scores were one standard deviation above or below the midpoint of the scale (i.e., 4) were categorized into the H or L group, respectively. We then calculated means and standard deviations for both groups, which, in turn, we used to calculate our required sample size. We estimated that we needed a minimum of seventeen participants per group to achieve a .80 statistical power (sd1 =.70, sd2 = .6, mean diff. = .65, $\alpha = .05$). We closely monitored the data collection and closed the survey after we exceeded the minimum requirement.

Study Sample

A total of 209 people participated in the survey, among which 49 were referred by others and 160 self-referred. Figure 2 presents the information about referral in relation to playfulness group memberships. High missing data rates (20.6 percent to 24.9 percent) existed for socio-demographic variables surveyed at the end of the questionnaire. Among respondents who provided demographic information, the majority were Caucasian (64.1 percent) and female (56.5 percent), with a bachelor's or higher degree (50.7 percent), a mean age of 38.6 years (range=19–67), and household income between $15,000 and $74,999. No

	H	L	*Total*
Self-referred	61	99	*160*
Other-referred	29	20	*49*
Total	*90*	*119*	*209*

Figure 2. Referral source and group membership information of Study 2 sample

significant differences in socio-demographic characteristics were found between the high playful group and the low playful group except in age ($Mean_h = 36.0$ vs. $Mean_l = 40.5$, $p = .04$).

Measures

We included three measures in the Study 2 questionnaire: the APTS, the 10-item SDS (Strahan and Gerbasi 1972), and two global measures of playfulness designed to assess the respondent's self-rating ("I think I am") and presumed friends' rating of self ("my friends think I am"). Both global measures used nine-point semantic differential scales with end points labeled as "not at all playful" and "extremely playful."

Data Analysis Strategies

Our initial inspection of the data indicated very few missing responses (less than 5 percent) for all nondemographic variables. Therefore, we used pairwise deletion to handle missing data in SPSS16.0. We analyzed composite scores for the APTS and the SDS and the potential social desirability bias of the APTS using the same methods described in Study 1.

Pilot social desirability analyses indicated no significant correlations between the APTS and the SDS scores for either the other-referred sample ($r = -.13$ to $-.26$, ns) or the self-referred sample ($r = -.09$ to $-.16$, ns). In light of this result, we decided not to control for the SDS scores in subsequent analyses.

We analyzed group differences in the scores of the APTS and subscales for the other-referred sample as initially proposed (hypotheses 6-1 and 6-2). Given

the lack of social desirability bias associated with the self-referred sample, we pooled this sample with the other-referred sample and repeated the analysis for both the self-referred sample and the pooled sample to provide estimation triangulation. Our preliminary inspection of the data set suggested uneven group sizes and nonnormality, leading to our choice of Welch Robust testing to examine group differences. Compared to F statistics used in ANOVA, the Welch statistic corrects for unequal group size and nonnormality, thus provides unbiased estimates of parameters. We applied Bonferroni correction for multiple comparisons. Furthermore, we calculated Cohen's d (Cohen 1988), a measure independent of sample size, to examine the effect size of group differences.

Finally, we estimated correlations between the APTS scores and two global measures using data from the entire sample (Hypothesis 5).

Measures	Min.	Max.	Mean	SD	Cronbach's α
APTS	1.59	7.00	4.78	0.82	0.87
Playful behavior	1.80	7.00	5.16	0.89	0.75
SAE_mental play	1.40	7.00	4.64	1.01	0.72
SAE_environment	1.88	7.00	4.71	0.90	0.79
SAE_self mode	2.67	6.87	5.43	0.83	0.89
Goal attainment	1.33	7.00	5.00	1.20	0.83
Freetime boredom	1.00	4.83	2.05	0.91	0.83
Global playfulness	1.00	7.00	4.54	1.12	0.65

Figure 3. Basic descriptive information of the APTS and theoretically related multi-index measures

Results

Study 1

We found no significant correlation between scores of the APTS, including its subscales, and the SDS scores (r = -.06 to .02, ns), suggesting that participants' responses were not influenced by a desire to convey a socially desirable image. Therefore, we did not control for the SDS scores in subsequent correlation analyses of substantive variables. Figure 3 presents the descriptive and reliability information of all multi-item substantive measures based on their composite scores.

Figure 4 presents the correlations between the APTS and measures of theoretically related constructs. Cohen (1988) suggested a guideline for interpreting the effect size of correlations in social sciences: r = .1 to 0.23 indicates a small effect; 0.24 to 0.36, a medium effect; and 0.37 or higher, a large effect (see also Rosnow and Rosenthal 1996). Using this guideline, we found strong and significant correlations between the APTS and the average tendency to engage in playful behavior, supporting Hypothesis 1, and between the APTS and global measures of playfulness, supporting Hypothesis 5. As hypothesized, we found significant small to modest correlations (r = .18 - .30, $p < .01$) between the APTS and the three SAE dimensions (Hypothesis 2), indicating partial conceptual overlap between the two constructs. Specifically, the APTS correlated with the environmental mode of SAE most strongly (r = .30), indicating that more playful people are more likely to seek external sources to entertain themselves in free time.

We found small but significant negative correlations between the fun-seeking motivation subscale and goal-attainment attitude (r = - .16, $p < .01$) and free-time boredom (r = - .20, $p < .01$), supporting hypotheses 3 and 4, respectively. These two results suggested that individuals with a strong fun-seeking

Measure	Playful Behavior	Global Playfulness	SAE Mental play	SAE Environment	SAE Self mode
The APTS	.55**	.59**	.20**	.30**	.18**

Figure 4. Correlations between the APTS and theoretically related constructs

**p<.01; *p<.05

Scale/Subscale	Mean (s.d.) H	Mean (s.d.) L	Welch Statistics (*df*1, *df*2)	P	Cohen's d	% Nonoverlap
The APTS	5.38 (.80)	4.45 (1.01)	11.770 (1,34.4)	.008**	1.30	65.3
Subscales						
Fun-seeking motivation (sing.)	5.71 (.70)	4.80 (1.01)	12.303 (1,31.2)	.004**	1.52	70.7
Uninhibitedness	4.98 (1.07)	4.09 (1.17)	7.485 (1,38.5)	.036*	0.80	47.4
Spontaneity	5.17 (1.14)	4.20 (1.27)	7.510 (1,37.8)	.036*	0.81	47.4

Figure 5. Welch Robust test of differences between H and L groups (the other-referred sample)

orientation tend to care a little less about external goals during play and feel a little less bored during free time.

Finally, supplementary correlation analyses revealed no significant relationships between goal attainment and the APTS (r = .08, ns), spontaneity (r = .00, ns), or uninhibitedness (r = .06, ns). Similarly, we found no significant relationships between free-time boredom and the APTS (r = -.03, ns), spontaneity (r = .06, ns), or uninhibitedness (r = .00, ns).

Study 2

We observed the results of Welch Robust testing for the other-referred sample, the self-referred sample, and the pooled sample largely converged—similar large effect sizes (Cohen's d near or greater than 0.8) in all three solutions—allowing us to have stronger confidence in the estimation. To avoid redundancy, we report here only the results from the other-referred sample (figure 5).

Cohen (1988) provided a rule of thumb for interpreting effect size of mean differences: small, $d = .2$; medium, $d = .5$; and large, $d = .8$. Overall, we found significant differences in the APTS scores between the H and L groups (Welch Statistics = 11.78, $df1=1$, $df2=34.4$, p=.008). Moreover, the large effect size (Cohen's d = 1.30) and over 65 percent nonoverlap of scores indicated that the APTS successfully and effectively differentiated the two groups, supporting Hypothesis 6-1. We found similar results for the three APTS subscales (Cohen's d = .80 - 1.52), indicating that each subscale, if used independently, could successfully and effectively distinguish more playful individuals from less playful ones, supporting Hypothesis 6-2. Notably, the fun-seeking motivation scale, with the largest effect size (Cohen's d = 1.52), appears to have a relatively sensitive differentiation ability.

Finally, the APTS scores significantly correlated with two global measures of playfulness (presumed friends' rating: $r = .69$, $p < .01$; self-rating: $r = .64$, $p < .01$), providing additional supporting evidence for Hypothesis 5.

Discussion and Conclusions

Our research provides empirical validation of a new measurement of playfulness in adulthood—the APTS (Shen, Chick, and Zinn 2014)—by examining the nomological network of playfulness, including its relationships with a consequent behavioral construct, namely the tendency to engage in playful behavior, a theoretically related personality construct, SAE (Mannell 1984), and alternative testing in forms of independent global measures and known playfulness levels associated with a priori criterion groups. Tapping into the relatively rich literature surrounding the intrinsically motivated aspect of playfulness, we also examined the predictive and concurrent validity of the fun-seeking motivation subscale of the APTS by examining its relationships with measures of a subsequent attitudinal construct—goal attainment (Apter 1991; Harris 1981), and a theoretically related perceptual construct—leisure boredom (e.g., Caldwell et al. 1999).

Results from two studies provided consistent, supporting evidence for the validity of the APTS, demonstrating that the APTS scores correlate with various measures in ways predicted by theories. As hypothesized, we found that individuals who scored higher on the APTS also reported engaging in playful behavior more often (Hypothesis 1), being a better self-entertainer during free time (Hypothesis 2), and having a more playful global self-perception (Hypothesis 5). Moreover, two criterion groups identified by their friend or families prior to the survey, one as most playful, the other as least playful, reported starkly different APTS scores that were consistent with their known levels of playfulness (Hypothesis 6-1). These results, respectively, provided corroborative evidence for the APTS' predictive, concurrent, and convergent validity.

This research also offers initial validation for the APTS subscales. As hypothesized, individuals who scored high on the fun-seeking motivation subscale also reported a low commitment to attaining external goals in competitive games (Hypothesis 3) and a weaker tendency to perceive boredom in free time (Hypothesis 4). Additionally, all three APTS subscales—fun-seeking motivation, spontaneity, and uninhibitedness—demonstrated excellent differentiation ability in the known-group design study (Hypothesis 6-2), attesting to the essential role of each subdimension in defining playfulness.

We confirmed our hypothesis of a small to modest positive correlation between the APTS and the SAE scale and supporting our proposition of a partial conceptual overlap between playfulness and SAE. This finding offers the first examination of the direct relationship between these two personality constructs that are of particular interest to researchers in leisure studies. We maintain that while both are useful constructs for studying pleasurable and satisfying human experiences, playfulness and SAE should not to be treated as interchangeable. The two traits seem to differ in their functional domains (i.e., all life circumstances versus free-time use), consequent behaviors (i.e., spontaneous versus mindful and spontaneous behavior), and emphases on leisure aptitude (i.e., not a constituent component versus a central criterion). In empirical research, careful examinations of the context are warranted to determine which construct is more relevant.

The validation of the APTS and its subscales supports broader applications of the instrument in playfulness-related research as well as independent use of each subscale for specific purposes. In practice, researchers may employ the entire APTS to assess an individual's overall level of playfulness, or employ an APTS subscale to address a specific research question. For example, if researchers are particularly interested in the uninhibited aspect of playfulness and how it relates to some criterion variables (e.g., how individuals perceive situations in which they behave playfully), the researchers may use only the uninhibited scale in their study.

Moreover, our exploration of playfulness and two theoretically related constructs also revealed valuable findings. Despite the negative relationship we observed between the intrinsically motivated aspect of playfulness and goal attainment, our results did not support a general statement about the relationship between playfulness and goal attainment as predicted by previous researchers (Ellis 1973; Harris 1981; Huizinga 1955; Sutton-Smith 1977). The lack of significant relations between goal attainment and the other two APTS subscales (i.e., spontaneity and uninhibitedness) suggested that whether people will be concerned with external goals during play depended more on their motivational styles than their cognitive tendencies. Similarly, we found leisure boredom to relate with only the fun-seeking motivation subdimension but not with the entire playful trait. The overall pattern of correlations suggested that the tendency to experience boredom during free time does not relate to spontaneity or uninhibitedness. It seems fair to conclude that, in contrast to many people's intuition and some researchers' arguments (Bowman 1987; Glynn and Webster 1992), playful

people do not necessarily feel less bored. A more thorough knowledge about the mechanism underlying boredom and how it relates to play or playfulness is warranted before large-scale investigations about the presumed "function" of playfulness for alleviating boredom should be launched. Combined, these results demand a more accurate understanding of the interconnected yet distinct aspects of playfulness. Our findings have brought to light that different subdimensions of playfulness may relate to the same variable differently. Researchers should take great caution when generalizing a conclusion pertaining to one aspect of playfulness to the entire construct of playfulness.

Future researchers may provide further validation of the APTS by collecting validity evidence from various sources based on content, internal structure, process, consequences, and relations with other variables. Reliability studies using various approaches, including investigation of the APTS's test-retest reliability, will help ensure that this instrument measures a relatively stable personality trait.

Finally, the use of study samples with similar demographic profiles prevented us from making generalizable statements beyond these samples. Researchers interested in the external validity of the APTS may apply this scale to a different population, such as adults outside of North America, children, or people with mental, learning, or physical disabilities. As we suggest in elsewhere (Shen, Chick, and Zinn 2014), however, necessary modifications to the scale and measurement procedures are warranted, depending on the need for special accommodations of the characteristics of the study population. The modification may be as straightforward (though not necessarily simple) as translating the measurements into another language or as elaborate as developing an equivalent form that measures the same underlying construct (e.g., observational scales for children and specially challenged participants). When modifying a scale, researchers inevitably run the risk of introducing extraneous factors that may jeopardize the modified scale's validity. We recommend careful inspection to avoid such worries.

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