Approach and Avoidance Temperament as Basic Dimensions of Personality

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**ABSTRACT** This research comprises 6 studies designed to examine approach and avoidance temperament as basic dimensions of personality. In Study 1, we developed direct measures of approach and avoidance temperament. In Study 2, we demonstrated that the approach and avoidance temperament variables are not epiphenomena of response biases. In Study 3, we documented the test-retest stability of the temperament variables. In Study 4, we documented that approach and avoidance temperament are separate from other like-valenced variables and may be construed as the core of these variables. In Study 5, we documented that approach and avoidance temperament are separate from chronic promotion and prevention foci. In Study 6, we distinguished the temperament variables from achievement goal variables and documented the temperament variables as antecedents of achievement goals and achievement goals as proximal predictors of performance. Approach and avoidance temperament are discussed as an ideal foundation for a strong, enduring structure of personality.

A central task of personality psychology is to identify and conceptualize the basic structure of personality. Scholarly effort in this regard commenced over two millennia ago with the work of the Greek physician Galen, may be seen in the work of Wilhelm Wundt (1886) at the advent of scientific psychology, and holds a prominent place in modern personality psychology (for a historical overview, see Steimack & Stalas, 1991). Galen offered a typological analysis of persons, Wundt (and others; Allport, 1937; Eysenck & Eysenck, 1964) shifted the focus from discrete types to continuous trait dimensions, and the primary emphasis in contemporary personality psychology is on continuous dimensions.

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The three most popular approaches to the basic structure question in the contemporary literature are the trait adjective approach (Eysenck & Eysenck, 1985; McCrae & Costa, 1987), the affective disposition approach (Tellegen, 1985; Watson & Clark, 1993), and the motivational system approach (Gray, 1987; Lang, 1995). Each of these approaches has a distinct focus and emphasis, and each offers a different set of central constructs. In recent research, we (Elliot & Thrash, 2002) argued that the central constructs from these different approaches are related and showed that two latent factors account for the shared variance among them. We labeled these latent factors approach and avoidance temperament. In the present research, we seek to move beyond the mere labeling of shared variance to conceptualize approach and avoidance temperament as constructs in and of themselves that may be directly assessed and evaluated. In a series of six studies, we developed self-report measures of individual differences in approach and avoidance temperament and further established the conceptual meaning and discriminant validity of these constructs by testing whether these measures capture conceptually relevant (as opposed to response bias) variance, show evidence of temporal stability, are related to but distinguishable from the central constructs in the aforementioned (and other) approaches, and have predictive utility.

**Approach and Avoidance Temperament Defined and Conceptualized**

In accord with our prior work (Elliot & Thrash, 2002), *approach temperament* is defined as a general neurobiological sensitivity to positive (i.e., reward) stimuli (present or imagined) that is accompanied by a perceptual vigilance for, an affective reactivity to, and a behavioral predisposition toward such stimuli. *Avoidance temperament* is defined as a general neurobiological sensitivity to negative (i.e., punishment) stimuli (present or imagined) that is accompanied by a perceptual vigilance for, an affective reactivity to, and a behavioral predisposition toward such stimuli. Both the approach–avoidance distinction and the temperament concept reflect basic, rudimentary aspects of psychological functioning.

Approach–avoidance is a motivational distinction involving positive and negative evaluative valence and accompanying forces (Lewin, 1935). Positively evaluated stimuli are inherently associated with an approach orientation (literally or figuratively) toward the
stimuli, whereas negatively evaluated stimuli are inherently associated with an avoidance orientation (literally or figuratively) away from the stimuli. Approach and avoidance motivational processes are present in organisms across phylogeny (for a review, see Elliot, 1999) and are essential for adaptive functioning, as they move organisms toward potentially beneficial stimuli and away from potentially harmful stimuli (Tooby & Cosmides, 1990). These processes are presumed to be the most elemental reactions that organisms have to environmental stimuli (Zajone, 1998).

Temperament refers to core individual differences in emotional, motor, and attentional reactivity and (rudimentary) regulation (Rothbart & Derryberry, 1981; Thomas & Chess, 1977). Temperamental characteristics are heritable, are biologically based, emerge early in childhood, and are relatively stable across the life span (Bates, 1987; Buss & Plomin, 1984). Although temperament is thought to be constitutionally engrained, it is also presumed to be influenced by maturation and, to some degree, experience (Henderson & Wachs, 2007; Rothbart & Bates, 1998).

Approach and avoidance temperaments are posited to emerge from the operation of a broad network of neurophysiological mechanisms across the neuraxis. That is, approach and avoidance mechanisms are operative in the spinal chord (Berntson, Boysen, & Cacioppo, 2003; Lang, 1995), the brain stem (Berridge & Pecina, 1995; Panksepp, 1998), and the cortex (Davidson, 1992; Heller, 1993), and involve both neurotransmitter and hormonal activity (Berridge, 2000; Matthews & Gilland, 2001; Zuckerman, 1995). These mechanisms afford multiple types and levels of evaluative processing (Cacioppo & Berntson, 1994). Simple, phylogenetically early mechanisms afford low-level responding to concrete stimuli (Schneirla, 1959), and more complex, emergent mechanisms afford more sophisticated responding to a broader range of stimuli (Elliot, 2006). Interindividual variation in each of these mechanisms is presumed to contribute to approach and avoidance temperament, with the more sophisticated mechanisms manifesting more variation and contributing disproportionately to temperament. In sum, human functioning involves an intricate, partially redundant array of perpetually active approach and avoidance mechanisms, the joint operation of which produces net neurobiological sensitivities to valenced stimuli that we call approach and avoidance temperament.
Functionally, approach and avoidance temperament are viewed as instigators of valenced propensities. They produce immediate affective, cognitive, and behavioral inclinations in response to encountered or imagined stimuli, and they orient individuals in a consistent fashion across domains and situations. Although some action undoubtedly emerges directly from these temperamental proclivities, observable behavior and outcomes are often a function of goal pursuit (and other forms of self-regulation) as well as temperament. Goals complement temperament in that they provide directionality and flexibility. That is, individuals may adopt goals of the same valence as their underlying temperaments, affording more precise guidance for action, but they may also adopt goals of the opposite valence as their temperaments, overriding initial inclinations and redirecting behavior (e.g., an approach goal adopted in an attempt to override a basic avoidance tendency). Thus, approach and avoidance temperament represent general valenced tendencies, and these broad tendencies are often accompanied by goals that provide precise direction for action and serve as proximal predictors of outcomes.

Relation of Approach and Avoidance Temperament to Other Central Constructs

The approach and avoidance temperament constructs are both related to and distinct from the central constructs in the trait adjective, affective disposition, and motivational system approaches to personality (See Table 1). In the trait adjective approach, many different constructs are proffered, but Extraversion and Neuroticism appear in most models; Extraversion is commonly characterized as a dispositional tendency to be sociable, active, and optimistic, whereas Neuroticism is viewed as a dispositional tendency to be worry prone, emotionally unstable, and insecure (Costa & MacCrae, 1992; Eysenck, 1981). The central constructs in the affective disposition approach are positive emotionality and negative emotionality; positive emotionality represents a tendency to experience positive emotion and to engage life in a positive manner, whereas negative emotionality represents a ten-

1. Many different labels and definitions have been utilized for each of the central constructs overviewed in this section. Herein we use the labels and definitions that are most widely used in the literature and that may be seen as representative of the broader class of labels and definitions.
### Table 1
Key Conceptual and Operational Differences Between Approach and Avoidance Temperament and the Other Central Constructs

<table>
<thead>
<tr>
<th>Comparison Constructs</th>
<th>Conceptual Differences</th>
<th>Operational Differences</th>
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| Trait adjectives: E and N | • E and N emphasize phenotypic expressions of behavior; app. and av. temperament emphasize genotypic processes that underlie specific actions  
• E includes a sociability component; app. temperament is equally applicable to all domains of activity | • Most E items have a strong sociability focus; all app. temperament items are general in focus |
| Affective dispositions: Pos. and neg. emotionality | • Pos. and neg. emotionality emphasize affect as the core of the construct; app. and av. temperament emphasize cognition and behavior as well as affect  
• Pos. and neg. emotionality focus on affective experience; app. and av. temperament focus on affective reactivity | • Many N items focus on the frequency of negative affect; the affect-based av. temperament items focus on affective reactivity rather than frequency  
• The pos. and neg. emotionality items focus on affect; the app. and av. temperament items focus on cognition and behavior as well as affect  
• The pos. and neg. emotionality items focus on the frequency of affect; the affect-based app. and av. temperament items focus on affective reactivity rather than frequency  
• BAS sensitivity is assessed multidimensionally; app. temperament is assessed unidimensionally |
| Motivational systems: BAS and BIS sensitivity | • BAS and BIS sensitivity are linked to a constrained set of biological structures and processes; app. and av. temperament are linked to a broad range of biological structures and processes across the neuraxis | |

(Continued)
Table 1 (Cont.)

<table>
<thead>
<tr>
<th>Comparison Constructs</th>
<th>Conceptual Differences</th>
<th>Operational Differences</th>
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<tbody>
<tr>
<td>Regulatory focus:</td>
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<tr>
<td>Prom. and prev. focus</td>
<td>- BIS sensitivity is conceptualized in terms of inhibition and, more recently, conflict; av. temperament includes inhibition, but also includes more active forms of avoidance and is conceptually independent of conflict</td>
<td>- Items for one BAS sensitivity dimension focus on a specific type of positive experience (i.e., fun); all app. temperament items are general in focus</td>
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<td>- Prom. and prev. focus are based in self-guides; app. and av. temperament are based in rudimentary psychological processes, rather than self-guides</td>
<td>- Many prom. and prev. focus items focus on ideal and ought standards; none of the app. and av. temperament items focus on ideal and ought standards</td>
</tr>
<tr>
<td></td>
<td>- Prom. and prev. focus are rooted in socialization; app. and av. temperament are primarily rooted in biology</td>
<td>- Many prom. and prev. focus items focus on achievement motivation (several on academics, in particular); all app. and av. temperament items are general in focus</td>
</tr>
<tr>
<td>Situation-specific</td>
<td>- Achievement goals are specific to a single domain; app. and av. temperament are applicable across domains</td>
<td>- Achievement goal items focus on achievement motivation; app. and av. temperament are general in focus</td>
</tr>
<tr>
<td>goals: Achievement</td>
<td>- Achievement goals serve to direct and guide behavior; app. and av. temperament serve to orient and energize behavior</td>
<td>- Achievement goal items focus on both valence and competence; app. and av. temperament focus on valence alone</td>
</tr>
<tr>
<td>goals</td>
<td></td>
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*Note.* The operational differences component of the table is based on the measures used in the present research: the Approach-Avoidance Temperament Questionnaire for approach and avoidance temperament; the Eysenck Personality Questionnaire–Revised for Extraversion and Neuroticism, the Positive and Negative Affect Schedule for positive and negative emotionality, the BAS/BIS Scales for BAS and BIS sensitivity, and the Regulatory Focus Questionnaire for chronic promotion and prevention foci. E = Extraversion, N = Neuroticism, app. = approach, av. = avoidance, pos. = positive, neg. = negative, BAS = Behavioral Activation System, BIS = Behavioral Inhibition System, prom. = promotion, and prev. = prevention.
dency to experience negative emotion and to engage life in a negative manner (Tellegen, 1985; Watson, Clark, & Tellegen, 1988). The central constructs in the motivational system approach are behavioral activation system (BAS) sensitivity and behavioral inhibition system (BIS) sensitivity; the BAS is posited to produce positive affect and to facilitate behavior in response to conditioned appetitive stimuli, whereas the BIS is posited to produce negative affect and to inhibit behavior in response to conditioned aversive stimuli (Gray, 1987; see also Lang, 1995).

Approach and avoidance temperament share two fundamental similarities with these central constructs, aside from their shared focus on basic, domain-general dispositions. First, like approach and avoidance temperament, each of the pairs of central constructs may be characterized with regard to valence. Extraversion, positive emotionality, and BAS sensitivity are positively valenced in that they implicate positive affect, cognition, and/or behavior in accounting for personality consistency, and, conversely, Neuroticism, negative emotionality, and BIS sensitivity are negatively valenced in that they implicate negative affect, cognition, and/or behavior in accounting for personality consistency. Second, like approach and avoidance temperament, each of the central constructs has been conceptualized, to varying degrees, as heritable, biologically based, emergent in early childhood, and relatively stable across the life span (Clark & Watson, 1999; Eysenck, 1967; Gray, 1982; McCrae & Costa, 1999; Tellegen, 1985). That is, each of the central constructs has been characterized as temperamental in nature.

However, approach and avoidance temperament are also distinct from their like-valenced counterparts in important ways. Extraversion and Neuroticism differ from approach and avoidance temperament in that the former constructs emphasize overt phenotypic expressions of behavior (e.g., those high in Extraversion are outgoing and sociable), whereas the latter emphasize basic psychological processes that underlie specific actions (e.g., those high in approach temperament are quick to recognize positive opportunities). Positive and negative emotionality differ from approach and avoidance temperament in that the former constructs emphasize affective experience, whereas the latter emphasize motivation (including affective reactivity, perceptual vigilance, and behavioral inclination). BAS and BIS sensitivity differ from approach and avoidance temperament in that the former constructs are linked to a highly constrained set of eliciting stimuli, neuroanatomical structures, and
neurophysiological processes, whereas the latter are presumed to be elicited by a broader range of stimuli and to emerge from a broader network of interacting but partially independent neuroanatomical structures and neurophysiological processes operative across the neuraxis (including, but not limited to, those detailed in the BAS and BAS literature).

Empirical work has documented positive relations and similar factor loadings among Extraversion, positive emotionality, and BAS sensitivity on one hand and among Neuroticism, negative emotionality, and BIS sensitivity on the other (Ball & Zuckerman, 1991; Gable, Reis, & Elliot, 2003; Quilty & Oakman, 2004). We have proposed that the reason for the convergence among the positively valanced variables is that they share an underlying core, namely, approach temperament, and, likewise, that the reason for the convergence among the negatively valanced variables is that they share an underlying core, namely, avoidance temperament (Elliot & Thrash, 2002). To date, these core constructs have been assessed in terms of latent variables derived from the like-valanced central constructs.

There are two important limitations to conceptualizing and operationalizing approach and avoidance temperament in terms of shared variance among these central constructs. First, the shared variance among the central constructs may underrepresent certain aspects of approach and avoidance temperament or may include peripheral content not applicable to approach and avoidance temperament or both. Approach and avoidance temperament are constructs in and of themselves and are only crudely captured by latent variables derived from other constructs. Second, even if this first conceptual issue were not a problem, the fact would remain that operationalizing approach and avoidance temperament with three measures each and relying on latent variables in empirical work (see Mauer & Borkenau, 2007) is inefficient and unnecessarily limiting. Accordingly, direct measures of approach and avoidance temperament per se are clearly needed. Such measures would bypass the aforementioned conceptual and methodological problems and afford a clear and efficient test of the separability of the approach and avoidance temperament constructs from the central constructs in the trait adjective, affective disposition, and motivational system literatures as well as other popular constructs from research on regulatory focus and goal regulation. It would also afford a clear and efficient test of the predictive utility of the approach and avoidance temperament constructs.
The Present Research

Six studies were conducted in the present research. In Study 1, we sought to directly assess approach and avoidance temperament as internally consistent and relatively independent personality dimensions. In Study 2, we sought to document that the approach and avoidance temperament variables are not mere epiphenomena of one or more possible response biases. In Study 3, we sought to establish the test-retest stability of the approach and avoidance temperament variables. In Study 4, we sought to demonstrate that approach and avoidance temperament are separate from like-valenced constructs in the trait adjective, affective disposition, and motivational system approaches to personality and that approach and avoidance temperament represent the core of the central constructs in these approaches. In Study 5, we sought to demonstrate that approach and avoidance temperament are separate from chronic promotion and prevention focus. In Study 6, we sought to distinguish the approach and avoidance temperament constructs from situation-specific approach and avoidance achievement goal constructs and aimed to establish the predictive utility of the temperament constructs with regard to goal adoption and performance attainment. Table 1 provides an overview of key conceptual differences between approach and avoidance temperament and the other constructs examined in the present research; this table also overviews differences in operationalization of these constructs, with a focus on the measures used in the present research.

STUDY 1

In Study 1, we developed measures of approach and avoidance temperament. We anticipated that these variables would be relatively independent of each other (i.e., exhibit a null or small positive or negative relation) because they are presumed to emerge from relatively independent biological structures and processes (Cacioppo & Berntson, 1994; Panksepp, 1998).

Method

Participants and Procedure

One hundred forty-nine (56 male and 93 female) undergraduates participated in the study for extra course credit. The study simply
involved participants completing the Approach-Avoidance Temperament Questionnaire (ATQ) in small group sessions.

The ATQ Measure

A series of pilot studies was conducted to examine a broad sampling of candidate items that covered the content universe under consideration. From these candidates, 12 items were culled to form the ATQ, 6 representing approach temperament and 6 representing avoidance temperament. Items were selected on the basis of content (e.g., each measure covering affective reactivity, perceptual vigilance, and behavioral inclination) and psychometric criteria (e.g., each measure displaying internal consistency). The items that comprise the ATQ as well as participant instructions, response options, and scoring instructions are presented in the appendix.

Results and Discussion

The data from the 12 items of the ATQ were submitted to an exploratory factor analysis with principal components extraction and varimax rotation. The analysis yielded two factors with an eigenvalue exceeding unity. The first factor accounted for 31.78% of the variance and consisted of the six avoidance temperament items, and the second factor accounted for an additional 18.70% of the variance and consisted of the six approach temperament items. For approach temperament, the factor loadings on the primary factor ranged from .75 to .65, and the factor loadings on the secondary factor ranged from .03 to -.36. For avoidance temperament, the factor loadings on the primary factor ranged from .82 to .53, and the factor loadings on the secondary factor ranged from .10 to -.24.2

The approach temperament mean was 32.91 (SD = 4.85, range = 15–42); the avoidance temperament mean was 24.11 (SD = 7.05, range = 8–41). Both temperament measures demonstrated good internal consistency: Approach temperament $\alpha = .80$ and avoidance temperament $\alpha = .79$. The correlation between the two measures was modest, $r = -.27, p < .01$.

2. Using Principal Axis Factoring yielded similar results: a two-factor solution, with each item loading on its hypothesized factor and no crossloading items.
Thus, the results from this study clearly support two factors representing internally consistent and relatively independent approach and avoidance temperament variables.  

**STUDY 2**

In Study 2, we sought to validate the two-factor structure from Study 1 using confirmatory factor analysis (CFA). In addition, we examined the possibility that the observed two-factor structure is simply a function of one or more response biases. It is possible that the factors from Study 1 simply represent tendencies to endorse positive statements or reject negative statements about the self, or both. We addressed this issue by controlling for various response biases in testing the hypothesized two-factor structure and by examining a variety of alternative models.

**Method**

*Participants and Procedure*

One hundred fifty (52 male, 97 female, 1 sex not specified) undergraduates participated in the study in return for extra course credit. The study involved participants completing a take-home questionnaire packet.

*Measures*

*Approach and avoidance temperament.* The ATQ described in Study 1 was used to assess approach and avoidance temperament.

*Response bias.* Paulhus’s (1991) Balanced Inventory of Desirable Responding (BIDR) was used to construct several measures of response bias. The BIDR has two 20-item subscales: Impression management (IM)

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3. Sex differences are not a focal issue in the present work. Nevertheless, in each study we conducted t tests to examine variation in approach and avoidance temperament as a function of sex. Null results were found with the following exceptions. In Study 3, approach temperament was stronger in women ($M = 32.12$) than men ($M = 28.54$), t(159) = 4.00, p < .001, and avoidance temperament was stronger in women ($M = 26.56$) than men ($M = 23.62$), t(159) = 2.17, p < .05. In Study 3, approach temperament was stronger in women ($M = 31.53$) than men ($M = 29.55$), t(137) = 2.21, p < .05, and avoidance temperament was stronger in women ($M = 26.37$) than men ($M = 23.74$), t(137) = 2.56, p < .05.
and self-deceptive enhancement (SDE). Participants respond to each item using a 1 (not true) to 7 (very true) scale. Half of the items for each subscale represent desirable statements (IM, e.g., “I always obey laws, even if I’m unlikely to get caught”), and half represent undesirable statements (IM, e.g., “When I was young I sometimes stole things”). After reverse scoring the undesirable statements, participants receive 1 point for each extreme (6 or 7) response, and their scores are summed to form IM ($\alpha = .75$) and SDE ($\alpha = .65$) indexes.

Following Elliot and Thrash (2002), we also created self-enhancement and self-protection bias indexes using the BIDR items. Prior to reverse scoring, we summed (across IM and SDE subscales) the number of extreme (6 or 7) responses to the desirable statements and the number of extreme (1 or 2) responses to the undesirable statements. The first 20-item measure, self-enhancement response bias ($\alpha = .63$), represents a tendency to agree with uncommon positive statements about oneself, whereas the second 20-item measure, self-protection response bias, represents a tendency to disagree with common negative statements about oneself ($\alpha = .69$)

Results and Discussion

The approach temperament ($M = 32.72$, $SD = 4.78$, range = 17–42) and avoidance temperament ($M = 26.26$, $SD = 7.55$, range = 9–42) measures demonstrated good internal consistency, $\alpha = .74$ and .81, respectively. The correlation between the measures was $r = .01$, ns.

CFAs were conducted to examine the two-factor structure obtained in Study I and the possible confounding role of response bias. The analyses were conducted using AMOS 6; covariance matrices served as input, and solutions were generated on the basis of maximum-likelihood estimation.

Two-Factor Structure

In the initial CFA model, each of the six approach temperament items were specified to be manifestations of an approach temperament latent variable, and likewise each of the six avoidance temperament items were specified to be manifestations of an avoidance temperament latent variable. Results confirmed that this two-factor model had a good fit to the data, $\chi^2(53, N = 150) = 84.84$, $p<.01$, $\chi^2/df$ ratio = 1.60, incremental fit indices (IFI) = .93, Tucker–Lewis Index (TLI) = .91, root mean square error of approximation (RMSEA) = .063, and all latent variable variances and factor loadings were
significant. This two-factor model fit the data significantly better than did a one-factor model, $\chi^2_{\text{diff}}(1, N = 150) = 153.28, p < .001$.

**Response Bias**

To examine response bias, several variants of CFAs were tested. In one analysis, IM scores were residualized out of each of the 12 ATQ items prior to testing the initial two-factor model. This model had a good fit to the data, $\chi^2(53, N = 150) = 82.73, p < .01, \chi^2/df$ ratio = 1.56, IFI = .93, TLI = .91, RMSEA = .061, with all latent variable variances and factor loadings significant and nearly identical to those in the initial model. This two-factor model fit the data significantly better than a one-factor model, $\chi^2_{\text{diff}}(1, N = 150) = 155.61, p < .001$. In a companion analysis, SDE scores were residualized out of each of the 12 ATQ items prior to testing the two-factor model. This model also had a good fit to the data, $\chi^2(53, N = 150) = 85.03, p < .01, \chi^2/df$ ratio = 1.60, IFI = .92, TLI = .90, RMSEA = .064, with all latent variable variances and factor loadings significant and nearly identical to those in the initial model. This two-factor model fit the data significantly better than a one-factor model did, $\chi^2_{\text{diff}}(1, N = 150) = 132.04, p < .001$.

Next, we examined a CFA model with four factors: approach temperament, avoidance temperament, IM, and SDE. Each of the four factors was represented with three parcels of items randomly selected from its corresponding item pool. This model was found to have a good fit to the data, $\chi^2(48, N = 150) = 51.05, p = .36, \chi^2/df$ ratio = 1.06, IFI = .99, TLI = .99, RMSEA = .021, and all latent variable variances and factor loadings were significant (see Figure 1a). This initial model was then compared to several sets of nested models in which the response bias variables were collapsed together with the temperament variables. In one set, one temperament variable was collapsed together with one response bias variable (e.g., approach temperament and IM represented a single latent variable and the rest of the model remained intact). The initial model fit the data significantly better than all four of these alternative, three-factor models, $\chi^2_{\text{diff}}(1, N = 150) \geq 46.28, p < .001$. In a second set of models, the first set was repeated with both valences tested simultaneously. The initial model fit the data significantly better than both of these alternative, two-factor models, $\chi^2_{\text{diff}}(2, N = 141) \geq 171.08, p < .001$. 
Figure 1
Confirmatory factor analyses from Study 2 examining the separability of the approach/avoidance temperament variables and impression management/self-deceptive enhancement response biases. For presentation clarity, error terms are omitted. All parameter estimates are standardized. Temp. = temperament; Enhance = enhancement.

*P < .05.
Approach and Avoidance Temperament

Turning to the valenced response bias indicators, we residualized self-enhancement bias scores out of each of the six approach temperament items and residualized self-protection bias scores out of each of the six avoidance temperament items. Repeating the initial two-factor CFA using these residualized items yielded a good fitting model, $\chi^2(53, N = 150) = 77.80, p < .05$, $\chi^2/df$ ratio = 1.47, IFI = .94, TLI = .92, RMSEA = .056, with all latent variable variances and factor loadings significant and nearly identical to the initial model. This two-factor model fit the data significantly better than a one-factor model, $\chi^2_{diff}(1, N = 150) = 131.87, p < .001$.

Next, we examined a CFA model with four factors: Approach temperament, avoidance temperament, self-enhancement bias, and self-protection bias. Each of the four factors was represented with three parcels of items randomly selected from its corresponding item pool. This model was found to have a good fit to the data, $\chi^2(48, N = 150) = 63.28, p = .07$, $\chi^2/df$ ratio = 1.32, IFI = .97, TLI = .96, RMSEA = .046, and all latent variable variances and factor loadings were significant (see Figure 1b). This initial model was then compared to several sets of nested models in which the response bias variables were collapsed together with the temperament variables. In one set, one temperament variable was collapsed together with the like-valenced response bias variable (e.g., approach temperament and self-enhancement bias represented a single latent variable and the rest of the model remained intact). The initial model fit the data significantly better than both of these alternative, three-factor models, $\chi^2_{diff}(1, N = 150) \geq 41.49, p < .001$. Second, the first set was repeated with both valences tested simultaneously. The initial model fit the data significantly better than this alternative, two-factor model, $\chi^2_{diff}(2, N = 150) = 77.64, p < .001$. Thus, the results from this study confirm the two-factor solution from Study 1. Furthermore, the two-factor solution remains robust when accounting for several response biases, indicating that the two-factor solution is not merely a measurement-based artifact.

**STUDY 3**

In Study 3, we sought to document the test-retest stability of the approach and avoidance temperament measures over a 9-week period. If the focal variables under consideration indeed represent
temperament, they should display good temporal stability during this time frame.

Method

One hundred sixty-one (52 male and 109 female) undergraduates participated in the study for extra course credit. Participants completed the ATQ at Time 1 (T1) and 9 weeks later at Time 2 (T2) in large group and take-home sessions.

Results and Discussion

Both the approach temperament ($M = 30.96, SD = 5.56$, range = 12–42) and avoidance temperament ($M = 25.61, SD = 8.14$, range = 9–42) measures demonstrated good internal consistency, $\alpha = .85$ and .86, respectively. The correlation between the measures was $r = .05$, ns.

We examined the test-retest stability of the temperament measures by specifying a four-factor CFA model that incorporated T1 and T2 CFA models simultaneously. The T1 and T2 portions of the model were identical to the two-factor model examined in Study 2. Covariances were specified among all four latent variables and between uniquenesses of identical items at T1 and T2 (Pitts, West, & Tein, 1996). Results confirmed that this four-factor model had a good fit to the data, $\chi^2 / df = 78.45, p < .01, \chi^2 / df = 1.87, IFI = .98, TLI = .95, \text{RMSEA} = .074$, and all latent variable variances and factor loadings were significant (see Figure 2). The test-retest correlations for the latent approach temperament and avoidance temperament variables were .70 and .85, respectively. Thus, the results from this study document the stability of the approach and avoidance temperament variables over a 9-week period.

STUDY 4

In Study 4, we examined whether approach temperament is related to but separable from Extraversion, positive emotionality, and BAS sensitivity and, likewise, whether avoidance temperament is related to but separable from Neuroticism, negative emotionality, and BIS sensitivity. We also tested whether approach and avoidance temperament may be construed as core constructs that account for the shared variance among the like-valenced central constructs.
Approach and Avoidance Temperament

Figure 2
Confirmatory factor analysis from Study 3 examining the test-retest stability of the approach and avoidance temperament variables. For presentation clarity, only the central variables are included and error terms are omitted. All parameter estimates are standardized. Temp. = temperament. *p<.05.

Method

Participants and Procedure
One hundred forty-one (32 male, 94 female, 15 sex not specified) undergraduates participated in the study in return for extra course credit. The study involved participants completing questionnaire packets in large group sessions.

Measures

Approach and avoidance temperament. The ATQ was used to assess approach and avoidance temperament.

Extraversion and Neuroticism. Eysenck, Eysenck, and Barrett’s (1985) EPQ-R was used to assess Neuroticism and Extraversion. The EPQ-R
consists of 12 Neuroticism items (e.g., “Would you call yourself tense or high strung?”) and 12 Extraversion items (e.g., “Do others think of you as being very lively?”). Participants responded no (1) or yes (2) to each item, and their responses were summed to form the Neuroticism and Extraversion indexes (both $\alpha = .83$).

Positive and negative emotionality. The trait version of Watson et al.’s (1988) Positive and Negative Affect Schedule was used to assess positive and negative emotionality. Ten items are used for positive emotion (e.g., excited) and 10 items are used for negative emotion (e.g., distressed). Participants responded on a 1 (very slightly or not at all) to 5 (extremely) scale as to how they feel in general, and their responses were summed to form positive and negative emotionality indexes ($\alpha = .91$ and $.88$, respectively).

BAS and BIS sensitivity. Carver and White’s (1994) BAS and BIS scales were used to measure BAS and BIS sensitivity. BAS sensitivity is assessed with 13 items (e.g., “It would excite me to win a contest”) and BIS sensitivity is assessed with 7 items (e.g., “I have very few fears compared to my friends”). Although the BAS scale can be broken into subscales, we used the composite scale herein based on well-established precedent (Harmon-Jones & Allen, 1997; Sutton & Davidson, 1997; Thrash & Elliot, 2004). Participants responded to the items on a 1 (strongly disagree) to 4 (strongly agree) scale, and their responses were summed to form the BAS and BIS sensitivity indexes.

Results and Discussion

The measures of approach temperament ($M = 32.26$, $SD = 5.12$, range = 15–42) and avoidance temperament ($M = 24.05$, $SD = 8.13$, range = 6–42) each demonstrated good internal consistency, $\alpha = .83$ and $.87$, respectively. The two measures were correlated at $r = -.01, ns$.

Interrelation and Separability of Basic Dimensions

The pattern of correlations between the temperament measures and the other measures supported the expected links among the like-valenced constructs. Approach temperament was positively related to Extraversion ($r = .42$, $p < .001$), positive emotionality ($r = .57$, $p < .001$), and BAS sensitivity ($r = .67$, $p < .001$), whereas avoidance temperament was positively related to Neuroticism ($r = .70$, $p < .001$), negative emotionality ($r = .63$, $p < .001$), and BIS sensitivity ($r = .76$, $p < .001$). These correlations are of medium to
high magnitude, yet each is less strong than would be expected among isomorphic constructs. The cross-valence correlations among the constructs (e.g., approach temperament and Neuroticism) were much weaker ($r_s = .07$ to $-.27$).

An initial CFA was conducted to test whether approach and avoidance temperament are distinct from the other assessed variables. The model in this analysis consisted of eight factors: approach temperament, avoidance temperament, Extraversion, Neuroticism, positive emotionality, negative emotionality, BAS sensitivity, and BIS sensitivity. All eight latent variables were represented with three parcels of items randomly selected from their corresponding item pools. This model had a good fit to the data, $\chi^2(224, N = 141) = 314.01, p < .001$, $\chi^2/df$ ratio = 1.40, IFI = .96, TLI = .94, RMSEA = .052, and all latent variable variances and factor loadings were significant. This initial model was then compared to several sets of nested models in which different variables were collapsed together with the temperament variables. In one set, one temperament variable was collapsed together with one other like-valenced variable (e.g., approach temperament and Extraversion represented a single latent variable and the rest of the model remained intact). The initial model fit the data significantly better than all six of these alternative, seven-factor models, $\chi^2_{\text{diff}}(1, N = 141) \geq 22.28, p < .001$. In a second set of models, the first set was repeated with both valences tested simultaneously. The initial model fit the data significantly better than all three of these alternative, six-factor models, $\chi^2_{\text{diff}}(2, N = 141) \geq 63.15, p < .001$. In a third set of models, one temperament variable was collapsed together with all other like-valenced variables (e.g., approach temperament, Extraversion, positive emotionality, and BAS sensitivity represented a single latent variable and the rest of the model remained intact). The initial model fit the data significantly better than both of these alternative, five-factor models, $\chi^2_{\text{diff}}(3, N = 141) \geq 81.15, p < .001$. In a final model, the third set was repeated with both valences tested simultaneously. The initial model fit the data significantly better than this alternative, two-factor model, $\chi^2_{\text{diff}}(6, N = 141) = 214.38, p < .001$.

Underlying Variables

In a full SEM model, the measurement model specified in the initial CFA above was supplemented with a structural model to examine
whether approach and avoidance temperament may indeed be characterized as common roots among the other focal variables. The approach temperament latent variable was specified to underlie the Extraversion, positive emotionality, and BAS sensitivity latent variables, and the avoidance temperament latent variable was specified to underlie the Neuroticism, negative emotionality, and BIS sensitivity latent variables. This model was found to have a good fit to the data, $\chi^2(245, \ N = 141) = 385.67, \ p < .001, \ \chi^2/df$ ratio $= 1.57, \ IFI = .93, \ TLI = .92, \ RMSEA = .062,$ and all latent variable variances and factor loadings were significant (see Figure 3). Alternative SEMs were then conducted in which the temperament latent variables and one pair of other latent variables were switched (e.g., the approach temperament and Extraversion latent variables were switched, and the avoidance temperament and Neuroticism were switched). None of these alternative models fit the data as well as the initial model, and each alternative model had at least one index that failed to indicate good fit according to conventional standards. Moreover, the hypothesized model had the lowest Akaike’s information criterion (AIC) value, indicating that it had the best fit (see Table 2).

Thus, the results from this study clearly indicate that approach temperament is associated with but distinct from Extraversion, positive emotionality, and BAS sensitivity, and that avoidance temperament is associated with but distinct from Neuroticism, negative emotionality, and BIS sensitivity. Indeed, the data suggest that approach temperament may be construed as the underlying core of the Extraversion, positive emotionality, and BAS sensitivity variables, and that avoidance temperament may be construed as the underlying core of the Neuroticism, negative emotionality, and BIS sensitivity variables.

**STUDY 5**

In Study 5, we examined the relations between approach and avoidance temperament and two constructs from regulatory focus theory (Higgins, 1997): chronic promotion focus and chronic prevention focus. Promotion focus represents an emphasis on ideals and potential gains in self-regulation, whereas prevention focus represents an emphasis on obligations and potential losses in self-regulation (Higgins, 1997; Higgins et al., 2001). Approach and avoidance temperament and chronic promotion and prevention focus are sim-
Figure 3
Structural equation model from Study 4 examining approach and avoidance temperament as underlying variables. For presentation clarity, only the central variables are included, and error terms are omitted. All parameter estimates are standardized. Temp. = temperament. *p < .05.
Table 2
Study 4: Fit Statistics for the Hypothesized and Alternative Models

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2/df$ ratio</th>
<th>IFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>AIC</th>
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<td>App./av. temperament as</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>underlying variables</td>
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<td>.92</td>
<td>.062</td>
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<tr>
<td>underlying variables</td>
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<td>.85</td>
<td>.083</td>
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<tr>
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<tr>
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<tr>
<td>underlying variables</td>
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<td>.91</td>
<td>.89</td>
<td>.072</td>
<td>590.14</td>
</tr>
</tbody>
</table>

Note. App. = approach; av. = avoidance; pos. = positive; neg. = negative; BAS = Behavioral Activation System; BIS = Behavioral Inhibition System.

ilar in that both represent motivational dispositions and are grounded, at least in part, in valence (Summerville & Roese, 2008). The two sets of constructs differ in that promotion and prevention focus emphasize the role of self-guides in regulation and are rooted in socialization, whereas approach and avoidance temperament emphasize more rudimentary psychological processes and are rooted primarily in biology. Accordingly, approach temperament and promotion focus are presumed to be positively associated but distinct constructs, as are avoidance temperament and prevention focus.

Method

Participants and Procedure

One hundred thirty-nine (47 male, 92 female) undergraduates participated in the study in return for extra course credit. The study involved participants completing questionnaire packets in large group sessions.

Measures

Approach and avoidance temperament. The ATQ was used to assess approach and avoidance temperament.

Chronic promotion and prevention focus. Lockwood, Jordan, and Kunda’s (2002) Regulatory Focus Questionnaire was used to assess
chronic promotion and prevention focus. This measure consists of nine promotion items (e.g., “I often think about the person I would ideally like to be in the future.”) and nine prevention items (e.g., “I am anxious that I will fall short of my responsibilities and obligations”). Participants responded on a 1 (not at all true of me) to 5 (very true of me) scale, and their responses were summed to form chronic promotion and promotion focus indexes (zs = 79 and .81, respectively).

Results and Discussion

Both the approach temperament ($M = 30.87, SD = 5.08$, range = 17–42) and avoidance temperament ($M = 25.14, SD = 8.07$, range = 6–42) measures demonstrated good internal consistency, $\alpha = .78$ and .87, respectively. The correlation between the measures was $r = .08$, ns.

The correlations between the temperament and regulatory focus measures were as follows: Approach temperament was positively related to chronic promotion focus ($r = .55$, $p < .001$), and avoidance temperament was positively related to chronic prevention focus ($r = .57$, $p < .001$). These correlations are of medium-high magnitude, but less strong than would be expected among isomorphic constructs. Approach temperament and chronic prevention focus were unrelated, as were avoidance temperament and chronic promotion focus (both $rs < .06$, ns).

An initial CFA was conducted to test whether approach and avoidance temperament are distinct from chronic promotion and prevention focus. The model in this analysis was comprised of four factors: approach temperament, avoidance temperament, chronic promotion focus, and chronic prevention focus. All four latent variables were represented with three parcels of items randomly selected from their corresponding item pools. This model had a good fit to the data, $\chi^2(48, N = 139) = 92.13$, $p < .001$, $\chi^2/df$ ratio = 1.92, IFI = .95, TLI = .93, RMSEA = .082, and all latent variable variances and factor loadings were significant. This initial model was then compared to several nested models in which at least one regulatory focus variable was collapsed together with a temperament variable to form a single latent variable. In one model, approach temperament was collapsed together with promotion focus, and the rest of the model remained intact. The initial model fit the data significantly better than this alternative three-factor model, $\chi^2_{\text{diff}}(1, N = 139) = 60.12$, $p < .001$. In a second model, avoidance
temperament was collapsed together with prevention focus, and the rest of the model remained intact. The initial model fit the data significantly better than this alternative three-factor model, $\chi^2_{\text{diff}}(1, N = 139) = 73.23, p < .001$. Finally, a third model that combined the features of the two alternative models was tested. The initial model fit the data significantly better than this alternative two-factor model, $\chi^2_{\text{diff}}(2, N = 139) \geq 130.76, p < .001$ (see Table 3 for a summary). Thus, the results from this study clearly support the separability of the temperament and regulatory focus constructs. Approach temperament is associated with but distinct from chronic promotion focus, and avoidance temperament is associated with but distinct from chronic prevention focus.

**STUDY 6**

In Study 6, we examined whether the focal temperament variables are distinct from situation-specific goal variables, namely, whether approach temperament is separable from approach-based achievement goals and avoidance temperament is separable from avoidance-based achievement goals. We predicted that the temperament and goal variables would be distinct, but also anticipated that the temperament variables would be systematic predictors of achievement goal adoption. On the basis of prior work (see Elliot, 2005), we
anticipated that approach temperament would be a positive predictor of mastery-approach goals (focused on approaching task-based and intrapersonal competence) and performance-approach goals (focused on approaching normative competence), whereas avoidance temperament would be a positive predictor of mastery-avoidance goals (focused on avoiding task-based and intrapersonal incompetence) and performance-avoidance goals (focused on avoiding normative incompetence). These temperament-goal relations would represent a channeling of like-valenced motivation from a general energizing and orienting to a more specific directing and focusing on a precise outcome. Also on the basis of prior work (Elliot & Church, 1997), we anticipated that avoidance temperament would be a positive predictor of performance-approach goals, a cross-valence “goal complex” representing approach in order to avoid (Elliot & Thrash, 2001; Thrash & Elliot, 2001). Finally, we predicted that approach and avoidance temperament would be distal predictors of performance, with achievement goals proximally accounting for performance outcomes; performance-approach goals were expected to positively predict performance, and performance-avoidance goals were expected to negatively predict performance (Elliot & Moller, 2003).

Method

Participants and Procedure

Two hundred thirty-three (79 male and 154 female) undergraduates participated in the study in return for extra course credit. The study involved participants completing questionnaire packets in large group sessions at the beginning of the semester and taking three normatively graded exams over the course of the semester.

Measures

Approach and avoidance temperament. The ATQ was used to assess approach and avoidance temperament.

Achievement goals. Elliot and McGregor’s (2001) 12-item Achievement Goal Questionnaire (AGQ) was used to assess participants’ achievement goals for the class. Three items are used to measure each goal construct: mastery-approach (e.g., “It is important for me to understand the content of this course as thoroughly as possible”), performance-approach (e.g.,
“It is important for me to do well compared to others in this class”), mastery-avoidance (e.g., “I am often concerned that I may not learn all that there is to learn in this class”), and performance-avoidance (e.g., “I just want to avoid doing poorly in this class”). Participants indicated their responses to each item on a 1 (not at all true of me) to 7 (very true of me) scale, and their responses were summed to form the four goal indexes (all $\alpha \geq .76$).

Exam performance. The exams comprised a mix of multiple-choice, fill-in-the-blank, and short-answer questions. An exam performance index was created by summing participants’ scores across the three exams.

Grade point average (GPA). Participants’ high school GPA was acquired from the university registrar.

Results and Discussion

The measures of approach temperament ($M = 30.75$, $SD = 5.44$, range = 10–42) and avoidance temperament ($M = 24.51$, $SD = 8.58$, range = 7–42) each demonstrated good internal consistency, $\alpha = .86$ and .82, respectively. The two measures were correlated at $r = .03$, ns.

Separability of Temperaments and Goals

An initial CFA was conducted to test whether approach and avoidance temperaments are distinct from approach and avoidance goals. The initial model was comprised of six factors: approach temperament, avoidance temperament, mastery-approach goals, performance-approach goals, mastery-avoidance goals, and performance-avoidance goals. The temperament factors were represented with three parcels of items randomly selected from their corresponding item pool; for the achievement goal factors, each item of the AGQ was used as an indicator of its corresponding factor. This model was found to have a good fit to the data, $\chi^2(120, N = 233) = 194.64$, $p < .001$, $\chi^2/df$ ratio = 1.62, IFI = .96, TLI = .95, RMSEA = .051, and all latent variable variances and factor loadings were significant. This initial model was then compared to several sets of nested models in which the goal variables were collapsed together with the temperament variables. In one set, one temperament variable was collapsed together with one like-valenced goal variable
(e.g., approach temperament and performance-approach goals were a single latent variable and the rest of the model remained intact). The initial model fit the data significantly better than all four of these alternative, five-factor models, $\chi^2_{diff}(1, N = 233) \geq 168.33$, $p < .001$. In a second set of models, the first set was repeated with both valences tested simultaneously. The initial model fit the data significantly better than both of these alternative, four-factor models, $\chi^2_{diff}(2, N = 233) \geq 420.34$, $p < .001$. In a third set of models, the temperament variable was collapsed together with both like-valenced goal variables (e.g., approach temperament, performance-approach, and mastery-approach goals were a single latent variable and the rest of the model remained intact). The initial model fit the data significantly better than both of these alternative, four-factor models, $\chi^2_{diff}(2, N = 233) \geq 252.36$, $p < .001$. In a final model, the third set was repeated with both valences tested simultaneously. The initial model fit the data significantly better than this alternative, two-factor model, $\chi^2_{diff}(4, N = 233) = 605.19$, $p < .001$.

Temperament Predicting Achievement Goals

In a full SEM model, the measurement model specified in the initial CFA above was supplemented with the hypothesized structural paths between the temperament and achievement goal variables to examine the link between temperament and achievement goal adoption. This model was found to have a good fit to the data, $\chi^2(129, N = 233) = 242.13$, $p < .001$, $\chi^2/df$ ratio = 1.88, IFI = .94, TLI = .92, RMSEA = .061, and all latent variable variances and factor loadings were significant. All but one hypothesized path was significant: Approach temperament was a positive predictor of mastery-approach ($\beta = .28, p < .001$) and performance-approach ($\beta = .16, p < .05$) goals, and avoidance temperament was a positive predictor of mastery-avoidance ($\beta = .23, p < .01$) and performance-avoidance ($\beta = .21, p < .05$) goals; only the cross-valence link between avoidance temperament and performance-approach goals yielded a null result ($\beta = .06, ns$).

Temperaments to Goals to Performance Attainment

An additional SEM model examined the temperament variables as indirect, and the goal variables as direct, predictors of exam perfor-
mance. The temperament and goal variables were represented in the same manner as above; each of the three exams was used as an indicator of the exam performance latent variable. The model included the hypothesized paths from the temperament variables to the goal variables and from the goal variables to exam performance. GPA was used as an observed exogenous variable, and the path from GPA to exam performance was included. This model was found to have a good fit to the data, $\chi^2(197, N = 233) = 351.41, p < .001$, $\chi^2/df$ ratio $= 1.78$, IFI $= .94$, TLI $= .92$, RMSEA $= .057$, and all latent variable variances and factor loadings were significant. Approach and avoidance temperament predicted achievement goal adoption in the same manner as reported above, and neither of the temperament variables was a direct predictor of performance ($\beta < .11, ns$). GPA was a positive predictor of performance ($\beta = .51, p < .001$), and the hypothesized paths from achievement goals to performance were also significant: Performance-approach goals were a positive predictor ($\beta = .18, p < .01$) and performance-avoidance goals were a negative predictor ($\beta = -.16, p < .05$; see Figure 4).\(^4\) MacKinnon, Lockwood, Hoffman, West, and Sheets's (2002) $z'$ test documented that approach temperament had an indirect effect on performance via performance-approach goals, $z' = 1.65, p < .01$; likewise, a $z'$ test documented that avoidance temperament had an indirect effect on performance via performance-avoidance goals, $z' = 1.63, p < .01$.

Thus, the results from this study clearly indicate that approach and avoidance temperament are distinct from but associated with like-valenced achievement goal variables. Approach temperament was shown to positively predict mastery-approach and performance-approach goals, and performance-approach goals were shown to be proximal positive predictors of performance attainment. Avoidance temperament was shown to positively predict mastery-avoidance and performance-avoidance goals, and performance-avoidance goals were shown to be proximal negative predictors of performance. The only prediction that was not confirmed was that avoidance temperament did not positively predict performance-approach goals. As anticipated, the temperament variables had an indirect, distal

\(^4\) Ancillary models that included paths from all goal variables to exam performance revealed null results for both mastery-approach goals ($\beta = -.08, ns$) and mastery-avoidance goals ($\beta = -.02, ns$).
influence on performance attainment through their role as antecedents of achievement goal adoption.

**GENERAL DISCUSSION**

In the present research we presented a series of studies in which we marshaled direct evidence for the validity and utility of the approach and avoidance temperament constructs. In Study 1 we documented that the two constructs could be assessed as internally consistent, relatively independent personality dimensions. In Study 2 we demonstrated that the approach and avoidance temperament variables capture variance separate from response bias variance. In Study 3 we documented the temporal stability of the approach and avoidance temperament variables. In Study 4 we showed that approach temperament is related to but separable from other popular positively
valenced variables (Extraversion, positive emotionality, BAS sensitivity), that avoidance temperament is related to but separable from other popular negatively valenced variables (Neuroticism, negative emotionality, BIS sensitivity), and that approach and avoidance temperament may be viewed as the underlying core of their like-valenced variables. In Study 5 we showed that approach temperament is associated with but distinct from promotion focus and avoidance temperament is associated with but distinct from prevention focus. In Study 6 we distinguished the temperament variables from achievement goal variables and documented the temperament variables as antecedents of achievement goal adoption and as distal predictors of performance attainment (via achievement goals).

An important contribution of the present research is the creation of measures that allow the approach and avoidance temperament constructs to be examined as variables in and of themselves in studies of personality structure and process. Until now, these constructs had only been considered in terms of shared variance among other constructs in the literature (Elliot & Thrash, 2002). The availability of direct measures of approach and avoidance temperament opens the door for efficient and flexible research on these personality dimensions. That is, as with the other espoused basic traits, the approach and avoidance temperament constructs may now be subjected to behavioral genetic analysis to determine genetic and environmental sources of variance (e.g., Borkenau, Riemann, Angleitner, & Spinath, 2001), may be linked to the operation of various neuroanatomical structures and neurophysiological processes (e.g., Depue & Collins, 1999), may be studied with regard to emergence and stability across the life course (e.g., Roberts, Caspi, & Moffitt, 2001), and so forth. This creation of a self-report measure may be seen as a first step in facilitating examination of approach and avoidance temperament as fundamental building blocks of personality. An important next step will be to establish implicit and behaviorally based indicators of these constructs for use in subsequent research.

A central premise of our work on approach and avoidance temperament is that these constructs not only represent basic elements of personality, but that they represent the core dispositions on which other dispositions rest. This premise was supported by our Study 4 results showing that approach and avoidance temperament could account for the shared variance among the other popular basic constructs, but that the other popular basic constructs could not serve
this same role. These data are promising, but we hasten to add that more research is needed, using additional methodological approaches (e.g., Markon, Krueger, & Watson, 2005), participants from different cultures (e.g., Tsai, Levenson, & McCoy, 2006), and additional dimensional candidates (e.g., Zuckerman, 1991) before any emphatic statements on this issue are warranted. Importantly, our vote for approach and avoidance temperament as the core dimensions of personality is not based just on empirical data, but on our knowledge of the fundamental nature of approach and avoidance motivation in affect, cognition, and behavior for humans across the life span and, indeed, for organisms across phylogeny (Elliot, 2006; Schneirla, 1959). Decisions regarding which dimensions represent the cornerstone of personality must be based on conceptual, as well as empirical, considerations, and we can think of no more suitable conceptual distinction on which to base an analysis of personality structure than that of the theoretically generative, broadly applicable approach–avoidance distinction (Elliot, 2008).

Where do approach and avoidance temperament fit with regard to other popular accounts of personality structure, such as Big Three models, the Big Five model, and Gray’s Reinforcement Sensitivity model? A pair of Big Three models have come to the fore in the literature, Eysenck’s (1981) trait adjective model and Tellegen’s (1985; see also Watson & Clark, 1993) affective disposition model. Eysenck’s model posits Extraversion, Neuroticism, and psychoticism as basic personality dimensions, whereas Tellegen’s model posits positive emotionality, negative emotionality, and constraint as basic dimensions. As noted earlier, approach and avoidance temperament are similar to Extraversion and Neuroticism (respectively) and positive and negative emotionality (respectively). However, relative to their like-valenced temperament construct, Extraversion and Neuroticism focus more on phenotypic behavioral expression, and positive and negative emotionality have a more constrained focus on affective experience. The third, nonvalenced constructs espoused by these Big Three models have a convergent focus on the degree to which individuals have strong impulse control (Digman, 1990; Tellegen, 1985; Watson & Clark, 1993; we use the term constraint herein to represent this construct). Based on the conceptual and empirical evidence in support of constraint (Carver, 2005; Clark & Watson, 1999; Eysenck, 1994), we believe that it is quite sensible to view this construct as a third dimension that warrants the status of
core component of personality. Approach and avoidance tempera-
ment are, in a sense, more fundamental than constraint in that they
are present earlier, implicate more rudimentary mechanisms (and,
accordingly, appear in a broader range of animate life), and actually
represent the contents on which constraint-based processes operate.
We view approach and avoidance temperament as the core "reac-
tive" aspect of personality and constraint as the core "regulatory"
aspect of personality (for related discussions, see Carver, 2005;
Henderson & Wachs, 2007; Rothbart, Ahadi, & Evans, 2000). In
short, our perspective is very much in accord with that of the Big
Three models, only we see the need to deepen and extend the reach of
the two valenced constructs in this type of model.

The Big Five model posits Extraversion, Neuroticism, Agreeab-
leness, Conscientiousness, and Openness to Experience as basic
dimensions of personality. Individuals high in Agreeableness are
good-natured, courteous, and sympathetic; those high in Conscien-
tiousness are careful, reliable, and well organized; and those high in
Openness to Experience are imaginative, curious, and have broad
interests. Empirical evidence for the basic nature of Extraversion and
Neuroticism is stronger than it is for the other three dimensions, and,
in accord with other personality theorists (Eysenck, 1992; Mc-
Adams, 1994), we view these other three constructs as less central
personality dimensions than Extraversion and Neuroticism (or, from
our standpoint, approach and avoidance temperament). This state-
ment implies that Agreeableness, Conscientiousness, and Openness
may be derived, at least in part, from underlying source dimensions
such as approach temperament, avoidance temperament, and con-
straint. Several theorists have posited and/or have provided data
suggesting that constraint underlies Agreeableness and Conscien-
tiousness, with those high in constraint being high in Agreeableness
and Conscientiousness (Digman, 1997; Eysenck, 1994; Markon
et al., 2005). We would add that Agreeableness, Conscientiousness,
and Openness may best be construed as emerging from several
source variables in additive or even interactive fashion. For ex-
ample, Agreeableness may reflect a combination of high approach tem-
perament and high constraint, Conscientiousness may reflect a
combination of high avoidance temperament and high constraint,
and Openness to Experience may reflect a combination of high ap-
proach temperament, low avoidance temperament, and high con-
straint. Future research would do well to test these possibilities.
Gray's (1982) reinforcement sensitivity model posits that a BAS, a BIS, and a fight or flight system give rise to basic personality dimensions that we label herein BAS sensitivity, BIS sensitivity, and fight or flight. As noted earlier, approach and avoidance temperament are similar to BAS and BIS sensitivity (respectively), except that the latter are linked to a more constrained set of set of eliciting stimuli, neuroanatomical structures, and neurophysiological processes. Flight or fight has not received much attention in the literature on personality structure, and we refrain from offering speculation regarding its place in a model of personality, in part because the reinforcement sensitivity model is currently undergoing a revision that may make such speculation immaterial. In this revision (Gray & McNaughton, 2000; McNaughton & Corr, 2004), the BAS sensitivity construct is broadened with regard to eliciting stimuli, the BIS sensitivity construct is changed to focus on approach–avoidance conflict, and the fight or flight construct is changed to a fight–flight–freeze system that is similar to the initial BIS sensitivity construct, only broadened with regard to eliciting stimuli. This refinement of the reinforcement sensitivity model is quite new and may still be underway; once conceptual consensus is reached and assessment tools are available, it will be important to revisit the conceptual and empirical issues that we have addressed in the present work with this revised model in mind.

Personality structure may be considered at different levels of specificity, and, in addition to the aforementioned models, several theorists have proposed higher order models that seek to identify the most basic building blocks of personality. Digman (1997) posited the dimensions Alpha and Beta; Becker (1999) posited the dimensions Mental Health and Behavioral Control; Blackburn and Fawcett (1999) posited the dimensions Impulsivity and Withdrawal; DeYoung, Peterson, and Higgins (2002) posited the dimensions Stability and Plasticity; and Hofstee (2001) and Musek (2007) posited a single superordinate dimension labeled Competence and The Big One, respectively. Most of these proposals are based on analyses of the Big Five model alone, and, more importantly, each is empirically derived and accompanied by a post hoc interpretation. Our proposal differs from these other proposals in that it is derived theoretically on the basis of the widely endorsed and utilized approach–avoidance distinction, and empirical support is obtained drawing on several different models of personality structure.
Temperament seems a particularly promising psychological concept to draw on in explicating the basic nature of personality because it focuses on constitutional, biologically rooted predispositions that are present throughout the life span. Several different temperament models have been proffered for infancy, middle childhood, adolescence, and adulthood, but these models differ considerably in the number of temperament constructs posited and in the content of these constructs (for reviews, see Saucier & Simonds, 2006; Shiner, 2006). These differences have been an impediment to integrative work across the life span. Rothbart and colleagues’ body of empirical work is noteworthy in this regard, as they have not only conducted studies across all aspects of the life span, but they have identified consistencies in content across age groups (for a review, see Rothbart et al., 2000; see also Caspi & Silva, 1995; Kagan, Snidman, Kahn, & Towsley, 2007). Most relevant to our work, they have included an Extraversion/surgency variable and a negative affect variable in their temperament measures for both young children (Putnam & Rothbart, 2006) and adults (Evans & Rothbart, 2007). In accord with our earlier discussion of the Big Three and Big Five models, we view these variables as similar to approach and avoidance temperament but as having a more constrained scope of conceptual coverage. Likewise, most of the other models of temperament in the literature contain constructs relevant to approach temperament or avoidance temperament, or both, in the same way (e.g., Buss & Plomin, 1984; Kagan, Reznick, & Snidman, 1988; Thomas, Chess, Birch, Hertzig, & Korn, 1963). Thus, our perspective is not only applicable to and compatible with existing models of personality but is also similarly applicable to and compatible with existing models of temperament.

Our research focused not only on personality dispositions presumed to be rooted in biology but also on dispositional regulatory foci presumed to be rooted in socialization. Our results clearly indicated that our temperament constructs are distinct from the regulatory focus constructs but also documented rather strong relations between approach temperament and promotion focus and avoidance temperament and prevention focus. The regulatory focus scales that we used in Study 5 have recently been shown to be heavily weighted toward valence rather than self-guides (see Summerville & Roese, 2008). This means that our test of construct separability was extremely conservative and also raises an interesting question, worthy
of subsequent exploration, as to whether the relations observed herein would remain strong or even statistically reliable using a regulatory focus measure based in self-guides per se.

A complete portrait of personality not only accounts for individual difference variation in orienting and reacting to stimuli across situations but also accounts for individual difference variation in situation-specific regulation (Cantor & Kihlstrom, 1987). Study 6 of the present research examined both of these levels of analysis, documenting systematic links across levels and illustrating the different functions served by the temperament and goal constructs. We found evidence for a valence congruence process in that approach temperament was linked to approach goal pursuit and avoidance temperament was linked to avoidance goal pursuit. Approach and avoidance temperament were shown to be distal predictors of performance attainment; their corresponding goals were documented as proximal predictors of performance. Thus, temperaments and goals appear to operate in complementary fashion in personality functioning, with temperaments serving an energization role and goals serving a directional role.

In Study 6, we predicted, but did not find evidence for, a valence override process in which avoidance temperament positively predicts performance-approach goal adoption. We have documented this type of process in other work with different constructs (Elliot & Church, 1997; Thrash & Elliot, 2002), and we are not sure why it was not found in the present research. Valence override of this type may only emerge when participants have other psychological resources (e.g., high competence perceptions) or encounter supportive environmental conditions (e.g., a generous grade distribution), and it is possible that such requirements were not met in our study. Goal adoption processes in general and valence override processes in particular are understudied in the literature, and we suggest that these issues move to the top of the research agenda. Additional research should also extend beyond undergraduate and North American participants; our restricted sampling may be considered a limitation of the present research. Furthermore, additional research is needed to examine goal adoption processes in domains other than achievement (e.g., the social domain), outcomes other than performance attainment (e.g., interest), and instances in which the temperament variables might influence outcomes directly.
In closing, a benefit of utilizing the approach–avoidance distinction and the temperament concept in our analysis of personality structure is that it ensures that our account is explanatory, not just descriptive, and dynamic rather than static. Both the approach–avoidance distinction and the temperament concept have been present in scholarly thought for over two millennia and are time-tested ideas that may be confidently used to conceptualize the basic nature of personality. The adage “A building is only as strong as its foundation” is as applicable to abstract thinking about persons as it is to concrete physical structures. We believe that approach and avoidance temperament represent an ideal foundation for a strong, enduring structure of personality.

REFERENCES


Approach and Avoidance Temperament


Appendix A

Please indicate how much you agree or disagree with each of the following statements by writing a number in the space provided. All of your responses are anonymous and confidential. Please select numbers according to the following scale:

1 2 3 4 5 6 7
Strongly Disagree    Neither     Strongly Agree
               Agree nor Disagree

1. By nature, I am a very nervous person.
2. Thinking about the things I want really energizes me.
3. It doesn’t take much to make me worry.
4. When I see an opportunity for something I like, I immediately get excited.
5. It doesn’t take a lot to get me excited and motivated.
6. I feel anxiety and fear very deeply.
7. I react very strongly to bad experiences.
8. I’m always on the lookout for positive opportunities and experiences.
9. When it looks like something bad could happen, I have a strong urge to escape.
10. When good things happen to me, it affects me very strongly.
11. When I want something, I feel a strong desire to go after it.
12. It is easy for me to imagine bad things that might happen to me.

Scoring key
Approach temperament = item2+item4+item5+item8+item10+item11
Avoidance temperament = item1+item3+item6+item7+item9+item12