Optimism, self-efficacy and information processing of threat- and well-being-related stimuli

Evangelos C. Karademas,*,† Konstantinos Kafetsios and Georgios D. Sideridis

Department of Psychology, University of Crete

Summary
The purpose of this study was to examine whether information bias associated with dispositional optimism and generalized self-efficacy can account for the link between general expectations and well-being. A modified Stroop task was used in this study. Our hypothesis was that individuals with high self-efficacy expectations or dispositional optimism would show greater bias towards well-being-related stimuli, whereas individuals with low self-efficacy or optimism would exhibit bias towards threat-related stimuli. A secondary hypothesis was that both self-efficacy and optimism would act as mediators of the latency, perceived distress relationship. One hundred and two undergraduate students participated in the study. After controlling for daily mood, the results showed that individuals high in optimism and self-efficacy showed greater informational bias towards well-being-related stimuli. The low self-efficacy group exhibited greater bias towards threat-related stimuli. Also, consistent with our hypothesis, optimism and self-efficacy mediated the relationship between the Stroop colour-naming latencies and perceived distress. These findings suggest that associations, which refer to automatic processes, may form an additional way through which expectations are related to functioning. Copyright © 2007 John Wiley & Sons, Ltd.

Key Words
self-efficacy; optimism; information processing; well-being; threat

Stimuli
There are two general classes of expectations, which are seminal for psychological well-being and functioning: self-efficacy and optimism. The first refers to an assessment of personal abilities to overcome taxing situations in the future (Bandura, 1977), whereas the latter refers to positive expectancies even in the face of obstacles (Scheier & Carver, 1985). Between self-efficacy and optimism there are noteworthy similarities, as well as significant differences. Both are evaluations about the future, although self-efficacy seems to be an antecedent of optimistic appraisal (a strong sense of self-efficacy facilitates optimistic appraisals; Bandura, 1997). On the other hand, optimism may reflect a more benign assess-
ment of the environment rather than of the personal capabilities (Carver & Scheier, 1998). Therefore, the joint examination of both types of expectations is important in order to delimit their contribution and interrelationships.

Optimism, self-efficacy and health/well-being

A voluminous literature documents the associations of dispositional optimism and generalized self-efficacy with various aspects of health, well-being and functioning. High self-efficacy expectations have been related to subjective well-being, positive emotions and good physical condition, in the general population (Bandura, 1997; Creed, Muller, & Patton, 2003; Lent et al., 2005), and better adaptation in chronic patients (Kuijer & de Ridder, 2003). On the contrary, low self-efficacy has been related to anxiety and depression (Kashdan & Roberts, 2004), low subjective well-being (Barlow, Wright, & Cullen, 2002; Caprara, 2002) and troubled psychological functioning (e.g. Gallagher, Parle, & Cairns, 2002). A recent cross-cultural study revealed that general self-efficacy is positively associated with optimism, self-regulation and self-esteem and inversely associated with depression and anxiety (Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005).

In the same vein, many studies have shown that optimism is significantly associated with several aspects of well-being. For example, optimism is negatively related to anxiety and depressive symptomatology (Shnek, Irvine, Stewart, & Abbey, 2001; Vickers & Vogeltanz, 2000), while it is positively related to subjective well-being, functioning and positive affective state (e.g. Carver et al., 2005; Eid & Diener, 2004). It is also strongly related to the physical and psychological functioning of patients suffering from various medical conditions (Carver et al., 1993; Fournier, de Ridder, & Bensing, 2002). Recently, Giltay, Geleijnse, Zitman, Hoekstra, and Schouten (2004) provided evidence for dispositional optimism having a protective role for all-cause mortality in old age.

However, a question remains regarding the specific pathways through which optimism and self-efficacy are associated with health functioning and well-being. Research has shown that both are strongly associated with behaviours, thoughts and emotions. High self-efficacy, for example, has been related to more positive thinking, higher self-esteem, higher goals and more positive emotions (Bandura, 1997; Locke & Latham, 1990; Schwarzer, 1992). Optimists also seem to employ more problem-focused coping strategies and more effective ways of emotional regulation (Taylor & Armor, 1996). Moreover, optimism mediates the relationship between perceptions about the world and the self and well-being (Karademas, 2006), whereas there is evidence that self-efficacy functions as a mediator between personality characteristics and adaptation (Major, Richards, Cooper, Cozzarelli, & Zubek, 1998). Thus, self-efficacy and optimism may be related to enhanced outcomes through regulating behaviour and emotions or through mediating other underlying cognitive structures and processes.

Informational biases and health/well-being

The vast majority of the studies on this topic have utilized self-report measures that involve conscious (and sometimes biased) reflections of the states that are studied (Segerstrom, 2001). Several everyday thoughts and behaviours, however, are also guided by automatic cognitive processes (Bargh & Chartrand, 1999). For example, informational biases (i.e. more attention devoted to certain stimuli) play a significant role in mediating the generation of behaviours and emotional reactions, as shown in previous research (e.g. Clark, 1988; MacLeod, Rutherford, Campbell, Ebsworthy, & Holker, 2002). There is a growing literature demonstrating the existence of informational biases associated with threatening or related stimuli in a diversity of situations. Informational biases have been identified, for example, in emotional disorders (Coles & Heimberg, 2002; Williams, Mathews, & MacLeod, 1996), eating disorders (Dobson & Dozois, 2004), post-traumatic stress disorder (Buckley, Blanchard, & Neill, 2000) as well as in situations related to physical threats (Erblich, Montgomery, Cloitre, Valdimarsdottir, & Bovbjerg, 2003) and physical health (Williams, Wasserman, & Lotto, 2003). In all these cases, research showed that a health condition of concern is associated with impaired information processing functioning. Such information biases are thought to be the outcome of an activation of cognitive structures, which are related to stimuli of concern (Beck & Clark, 1997; Beck, Emery, & Greenberg, 1985; Bower, 1981). Also, research with positive and negative stimuli has shown that their relevance to specific
cognitive schemas is probably what accounts for the biases in information processing, at least in non-clinical populations (Williams et al., 1996).

Besides distressing situations, optimism and self-efficacy expectations can also generate information processing biases. For example, Segerstrom (2001) has shown that optimism is associated with a greater informational bias for positive stimuli in relation to negative stimuli. Tafarodi, Marshall, and Milne (2003) have found that the two aspects of self-esteem, self-liking and self-competence, which is a concept related to self-efficacy, are associated with selective memory for negative information. Individuals low in self-esteem display more bias towards inadequacy-related stimuli. Also, Smith et al. (2006) recently showed that common informational biases to negative information are attenuated or even eliminated when positive constructs are made available.

The possible information processing biases generated by optimism and self-efficacy could initiate a more frequent activation of certain expectation-related schemas. Carver and Scheier (1998), and Bandura (1997) have already suggested that optimism and self-efficacy, respectively, keep schemas of personal abilities or success easily accessible. In this way, as a person pays more attention to a certain class of stimuli, related thoughts and emotions are more frequently raised, whilst underlying constructs associated with these particular stimuli are more frequently accessed (Bargh & Chartrand, 1999). This sets in motion a loop of corresponding thoughts, emotions and other reactions, which may lead to more informational biases, intensification of reactions and so on. In other words, the possible information processing biases generated by optimism and self-efficacy, and the related activation of relevant constructs could produce a more positive outlook for life and the future, more adaptive behaviours and better health.

The present study

The purpose of the present study was to examine whether generalized self-efficacy and dispositional optimism are associated with informational biases towards health and personal control-related stimuli (referred to as ‘well-being stimuli’), and general and personal-threat-related stimuli (referred to as ‘threat stimuli’). We consider these two types of stimuli important, since both optimism and efficacy expectations concern the effective coping with life threats, as well as the promotion of well-being and personal control (Bandura, 1977, 1997; Scheier & Carver, 1985, 2001).

The most commonly used method to assess informational biases to specific stimuli is the emotional Stroop task (MacLeod, 1991), which has been developed as a modification of the original Stroop procedure (Stroop, 1935). During this task, individuals are asked to name the colour of a word presented to them as quickly and as accurately as possible, while ignoring the meaning of the word. They are expected to delay or make more errors in colour-naming of the words related to their source of concern compared with neutral words (referred to as the ‘interference effect’). Interference is used as an indicator of attentional and informational bias towards a particular set of words. As Mogg and Bradley (1998, p. 817) properly put it: ‘Output from the Valence Evaluation System feeds into a Goal Engagement system, which in turn determines the allocation of resources for cognitive processing and action’. The emotional Stroop task and the interference effect have been consistently demonstrated to be valid and reliable measures of processing biases (Coles & Heimberg, 2002; Williams et al., 1996).

With the use of a modified Stroop task, this study examined the association between generalized self-efficacy expectations and dispositional optimism, and the information processing of specific stimuli. Our first hypothesis was that individuals with higher optimism and self-efficacy expectations will show informational biases towards well-being-related stimuli, whereas persons with lower expectations will exhibit biases towards threat-related stimuli. Our second hypothesis was that self-efficacy and optimism would mediate the relationship between the activation of underlying schemata and current psychological functioning, with the Stroop colour-naming latencies serving as indicators of the activation, and perceived distress serving as an indicator of current functioning. It may seem odd that self-efficacy and optimism are assumed to be predicted from word latencies, and not the opposite way. However, if latencies do reflect the underlying activation of cognitive schemata, it is possible that expectations are based on some of those schemata. Thus, it was a main purpose of the present study to examine whether variability in efficacy beliefs and perceptions of optimism
could be explained by cognitive interference to threat and well-being-related stimuli.

**Method**

**Participants**

One hundred and four psychology students participated in the study. Students were recruited through announcements in the class and received extra credit for their participation. Two participants were dropped from the analyses because of outlying values in the Stroop task (z > 3.0). Thus, 102 students comprised the final sample [80 females and 22 males; mean age = 20.51 years, standard deviation (SD) = 5.22].

**Measures**

**Optimism.** Dispositional optimism was assessed with the Life Orientation Test—Revised (Scheier, Carver, & Bridges, 1994). It consists of 10 items of which six measure optimism and the remaining four are fillers (Cronbach $\alpha = 0.79$).

**Self-efficacy.** Generalized self-efficacy expectations were measured with the General Perceived Self-Efficacy scale (Schwarzer & Jerusalem, 1995). The scale consists of 10 items (Cronbach $\alpha = 0.87$) and assesses one’s perceived ability to cope with stressful situations.

**Perceived distress.** Perceived distress, as an indicator of current functioning, was measured with the 10-item Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). It measures the degree to which situations in one’s life are appraised as demanding and stressful (Cronbach $\alpha = 0.88$).

**Mood.** Daily mood was included in the analyses as a covariate of self-efficacy and optimism, in order to control for the possible involvement of current affective state in the cognitive processes of attention (Bower, 1994). Mood was assessed with the Positive and Negative Affectivity Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The same-day instruction set was used (Cronbach $\alpha = 0.90$ and 0.88, for the PANAS, respectively).

**The Stroop task.** The Genov Modified Stroop task (GMST), developed by Genov, Shay, and Boone (2002) was implemented in the present study. The GMST is a recent computerized version of the emotional Stroop paradigm, demonstrated to be valid in previous Stroop studies (e.g. Kirsh, Olczak, & Mounts, 2005). It presents words in the centre of a circular twenty-colour palette. The words appear in one of the colours in the middle of the colour circle. After the word is presented, the respondent has to select the correct colour from the palette by using a mouse. Subsequently, the respondent has to click on a small circle in the centre of the screen to initiate the presentation of the next word. The software accurately records participants’ reaction time (in seconds) between the presentation of the word and the selection of corresponding colour. It also records the actual colour selected by the respondent. Each time the GMST is run, words are presented in a different, random order. Each word is presented only once.

Participants were asked to correctly select the colours of words deriving from three lists developed for the purposes of the present study. The first list, the ‘well-being’-related stimuli, consisted of personal-healthiness- (e.g. longevity, happiness) and personal-control-related words (e.g. potency, control). The second list, the ‘threat’-related stimuli, consisted of general (e.g. disasters, danger) and personal threat words (e.g. pain, disease). The third list consisted of neutral words (e.g. tree, couch). Each list consisted of 10 words (see Appendix). Initially, analyses of variance were performed to demonstrate equivalence of the word lists in terms of word length, number of syllables and frequency of usage in the Greek language (as appeared in the Hellenic National Corpus of the Greek Institute for Language and Speech Processing; http://hnc.ilsp.gr/statistics.asp). No significant differences between word lists regarding length, $F(2, 29) = 2.11, p > 0.05$, number of syllables, $F(2, 29) = 1.50, p > 0.05$, or frequency of usage (per million occurrences), $F(2, 29) = 0.74, p > 0.05$, were identified. These results are shown in Table I.

**Procedures**

Participants were individually tested in a psychology lab containing a PC with the computerized application. Firstly, they were administered the daily mood scales. Then, they were seated in front of the screen and were instructed that words written in different colours would be presented on the screen and they should indicate as rapidly
and as accurately as possible the correct colour in which the word was written. When the students consented that they understood the procedure, they were administered a practice list of five irrelevant words in order to familiarize with the task and reduce unfamiliarity effects that could emerge and impact the first trials. Following the warm-up trials and after all questions were answered and the procedure were explained in detail, administration of the four word lists began. At the end of the activity, participants were asked to fill out a set of questionnaires, assessing the remaining self-reported scales (see ‘Measures’ section above).

**Results**

**Self-efficacy, optimism and informational biases**

A repeated-measures analysis of variance (ANOVA) was performed, with word list being the within-subjects factor, optimism and self-efficacy expectations (low/high using median split procedures) the between-subjects independent variables and daily mood a covariate. The results of the ANOVA revealed no main affect for word list, \( F(2, 192) = 0.37, p > 0.10 \). Also, no main effect emerged for self-efficacy [i.e. between the high efficacy (\( M = 18.55 \)) and low efficacy groups (\( M = 19.05 \)), \( F(1, 96) = 0.67, p > 0.10 \), using the Bonferroni correction]. Similarly, no main effect was evident for optimism [\( M_{\text{high optimism}} = 19.09, M_{\text{low optimism}} = 18.51; F(1, 96) = 0.92, p > 0.10 \), using the Bonferroni correction]. Most importantly, however, there was a significant self-efficacy \( \times \) word list interaction, \( F(2, 192) = 10.04, p < 0.01 \), as well as a significant optimism \( \times \) word list interaction, \( F(2, 192) = 6.20, p < 0.01 \). Post hoc analyses of these interactions showed that: (a) high optimism and high self-efficacy individuals displayed a greater interference for well-being versus threat-related and neutral words; (b) low self-efficacy individuals exhibited longer colour-naming latencies for threat-related versus neutral words [\( Fs > 3.31, ps < 0.02 \), see Figure 1 (colour-naming latencies are presented per list)]; (c) low optimism individuals were no different from high optimists across comparisons (\( F < 0.29, p > 0.10 \)).

**Examining the mediating role of self-efficacy and optimism on stress using structural equation modelling**

In order to examine our second hypothesis that optimism and self-efficacy mediate the relationship between colour-naming latencies and perceived stress, a structural equation model was fit to the data using LISREL 8.54 (Joreskog & Sorbom, 1996). According to the model tested, perceived stress was assumed to be predicted by self-efficacy and optimism. Well-being and threat colour-naming latencies were assumed to predict both self-efficacy and optimism, whereas optimism was also predicted by self-efficacy. The intercorrelations of all variables included in the analysis are presented in Table II.

Our model provided a good fit to the data. The chi-square was not significant \( \chi^2 (2) = 2.01, p = 0.37 \). Also, statistical indices were indicative of excellent fit (adjusted goodness of fit index (AGFI) = 0.96, normed fit index (NFI) = 0.98, comparative fit index (CFI) = 1.00, root mean square error of approximation (RMSEA) = 0.01). All paths were statistically significant (\( p < 0.05 \), except paths from threat latencies to optimism, and well-being latencies to self-efficacy. Figure 2 displays the standardized estimates of the model. Non-significant estimates are not presented. Results showed that perceived stress is negatively predicted by optimism, which is positively predicted by well-being colour-naming latencies, as

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**Table I. Word list characteristics.**

<table>
<thead>
<tr>
<th>Word list</th>
<th>Word length</th>
<th>No. of syllables</th>
<th>Word frequency (per million)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Threat</td>
<td>6.60</td>
<td>0.97</td>
<td>2.90</td>
</tr>
<tr>
<td>Well-being</td>
<td>8.10</td>
<td>1.85</td>
<td>3.70</td>
</tr>
<tr>
<td>Neutral</td>
<td>7.00</td>
<td>2.05</td>
<td>3.40</td>
</tr>
</tbody>
</table>

*Note: All characteristics refer to the original Greek words used in this study.*
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well as by self-efficacy, which is negatively predicted by threat-related latencies. Optimism was also positively predicted by self-efficacy.

However, to test the validity of the model, we employed a ‘backward’ evaluation procedure in which all theoretically important paths were fixed to zero (one at a time) to test the hypothesis that the key posited relations were important. Thus, the model above (the ‘original’ model) was compared to a series of nested models in which the predictive validity of the predictors was examined using chi-square difference tests. We also tested an alternative ‘reversed’ model. According to this model, distress was assumed to be predicted by well-being- and threat-related colour-naming latencies, which in turn were predicted by optimism and self-efficacy, respectively. According to the results (see Table III), all paths were necessary, whereas all alternative models, except one, and the ‘reversed’ model did not fit the data.

Table II. Descriptive statistics and intercorrelations of colour-naming latencies, optimism, self-efficacy, and perceived stress.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threat latency</td>
<td>18.37</td>
<td>3.82</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well-being latency</td>
<td>19.15</td>
<td>3.40</td>
<td>0.43**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimism</td>
<td>20.95</td>
<td>5.06</td>
<td>0.08</td>
<td>0.26*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>28.73</td>
<td>5.04</td>
<td>-0.22*</td>
<td>-0.10</td>
<td>0.38**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived stress</td>
<td>27.48</td>
<td>6.53</td>
<td>-0.01</td>
<td>-0.16</td>
<td>-0.44**</td>
<td>-0.45**</td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05; **p < 0.01.

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Discussion

Dispositional optimism and general self-efficacy are strongly associated with well-being and adaptation (e.g. Bandura, 1997; Carver et al., 2005; Giltay et al., 2004; Luszczynska et al., 2005). This association is achieved through the regulation of behaviour, thoughts and emotions, as well as through mediating perceptions or traits and adaptation variables (e.g. Major et al., 1998; Schwarzer, 1992; Taylor & Armor, 1996).

The present study examined whether self-efficacy expectations and optimism impact the information processing of certain stimuli, as well as whether this forms a basis for the relationship between expectations and functioning. The findings provided support for our hypotheses in that individuals with high optimism or self-efficacy display more informational biases towards well-being (i.e. healthiness and control)-related stimuli, whereas individuals with low self-efficacy expectations display greater informational biases towards threat (personal and general)-related stimuli. The findings also supported our hypothesis that dispositional optimism and generalized self-efficacy mediate the relationship between the activation of underlying constructs, as assessed by the latencies in colour-naming, and perceived stress.

In a related study, Segerstrom (2001) reported that pessimists showed informational biases for negative stimuli. Individuals who were moderately optimistic showed equal informational biases towards negative and positive stimuli, whereas optimists exhibited greater biases for positive rather than negative stimuli. The present study further demonstrated that among both optimists and high self-efficacious individuals, there was a greater interference (i.e. greater informational bias) for well-being stimuli, whereas in persons with low self-efficacy there was a greater interference for threat-related stimuli. No interference emerged for individuals low in optimism. These results suggest that individuals who are high on self-efficacy or optimism are more ‘sensitive’ to well-being or control information, whereas individuals with poorer self-efficacy are more sensitive to threat-related information.

Previous research has shown that informational biases in several situations (e.g. Erblich et al., 2003; MacLeod, 1991; Williams et al., 1996) can shape behaviour or emotional reactions,
given that they play a central role in the generation and maintenance of emotions (Beck et al., 1985; MacLeod & Rutherford, 1992), as well as in the facilitation of decisions and actions (e.g. Cioffi, 1991). From the moment that optimists and persons with high self-efficacy expectations are more preoccupied with well-being stimuli, they may hold a more positive view of the self and the world, and they may focus more on the positive aspects of stressful situations. Thus, these individuals tend to have higher goals and the motivation to attain them, as well as the ability to engage appropriate coping strategies in order to deal with demanding situations. These adaptive behaviours may facilitate adaptation and well-being (Bandura, 1997; Carver & Scheier, 1998; Hack & Degner, 2004). It is also possible that more frequent access to positive underlying constructs, accommodated by the high expectations-related informational biases, attenuates the attention to negative information. Smith et al. (2006) have shown that this process takes place when positive constructs are made accessible. Furthermore, through information biases, optimism and self-efficacy may initiate the activation of constructs, which are also related to other factors, such as self-esteem or self-regulation abilities. Thus, they reinforce a constructive overall perception of the self. Luszczynska et al. (2005) have already demonstrated that strong relations among these traits do exist in different cultures, while Tafarodi et al. (2003) have found that self-competence (a concept related to self-efficacy) is associated with selective memory for negative information as well.

On the other hand, individuals with low self-efficacy are more preoccupied with threat-related stimuli. In general, after the identification of a threat, an elaborative processing of threat-related material is activated and almost all informational resources are allocated towards those stimuli (Beck & Clark, 1997). Several studies have demonstrated that this happens in several threatening situations (e.g. Buckley et al., 2000; Kindt & Brosschot, 1997; Williams et al., 1996). The allocation of great amounts of attention to threat-related stimuli makes it difficult to disengage from a fearful perception of the environment or discontinue stress-related reactions. This process may assist the employment and perpetuation of maladaptive behaviours (Beck & Clark, 1997; Scheier, Weintraub, & Carver, 1986; Williams et al., 1996). As a consequence, low self-efficacy perceptions are associated with information bias impairments towards health and functioning. The opposite is true of high self-efficacious individuals and high optimists. The finding that self-efficacy and optimism mediate the relationship of underlying structures activation to perceived stress provides further support to this suggestion.

An interesting pattern emerged in this study was that only low self-efficacy individuals reacted strongly to threat-related stimuli (i.e. with greater interference), whereas both high-efficacy individuals and high optimists reacted markedly towards well-being stimuli. This finding underlines not only that self-efficacy and optimism may be affiliated constructs, but also that they may have a different function. In this particular case, persons with low self-efficacy may allocate more informational resources to threatening stimuli because they may appraise themselves as potentially less able to confront threats. After all, self-efficacy refers to the evaluation of personal capabilities in the face of a problem (Bandura, 1977). On the contrary, optimists expect a rather positive outcome when a problem is present (Carver & Scheier, 1998). Thus, threatening stimuli may not be that concerning for optimists so as to allocate great amounts of informational resources to these stimuli.

The relation between optimism and self-efficacy, and informational biases is probably reciprocal and a change in one parameter generates an analogous change in the other. Therefore, an organized modification of existing expectations by means of systematic intervention can result in a corresponding adjustment of information processes. In other words, the strengthening of self-efficacy judgments and the reinforcement of optimistic appraisals can be a method for shifting informational resources to well-being- rather than threat-related stimuli. Cognitive treatments have demonstrated such potentials (A.T. Beck, 1993; J.S. Beck, 1995) and can be used for achieving this goal.

Finally, the above conclusions should be considered in relation to a number of limitations of the study. Firstly, sample size was modest across some of the comparisons, as groups were split into low and high based on mean scores. Gender comparisons could not be tested given the unequal gender distribution of the participants and again, the relative small sample sizes. Furthermore, a novel and more difficult task compared to the traditional version of the emotional Stroop paradigm was employed (e.g. computerized, use of twenty colours instead of 4–5 as
usually), while anxiety levels were not measured before the Stroop task (only positive and negative mood were assessed). However, anxiety might be responsible in part for the interference observed regarding threat words. Also there were no personal ratings for the emotionality of the words. As a result, the degree to which each word personally affected each participant remains unknown.

There are a number of research questions stemming from the present study. For example, task-specific stimuli could be assessed in order to examine the domain specificity of interference effects. Would threat-related stimuli related to health or achievement result in the same interference effects? Would the moderating variables, such as traits, have the same effect across situations? It is for the future research to give an answer to these questions.

In summary, the findings of this study demonstrated that generalized self-efficacy and dispositional optimism are associated with biased information processing towards threat and well-being stimuli. Besides the already acknowledged relationships with emotion, cognition and behaviour that are based on self-reports, associations that refer to automatic processes, such as those identified in this study, may form an additional way through which expectations are related to health and functioning. The mediating role of expectations in the reaction latencies—perceived stress relation provided further relevant evidence.

References


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E. C. Karademas, K. Kafetsios and G. D. Sideridis


Appendix

Word lists used in the modified Stroop task.

<table>
<thead>
<tr>
<th>Well-being words</th>
<th>Threat-related words</th>
<th>Neutral words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vigour</td>
<td>Danger</td>
<td>Museum</td>
</tr>
<tr>
<td>Longevity</td>
<td>Disasters</td>
<td>Tree</td>
</tr>
<tr>
<td>Control</td>
<td>Menace</td>
<td>World</td>
</tr>
<tr>
<td>Happiness</td>
<td>Disease</td>
<td>Pencil</td>
</tr>
<tr>
<td>Potency</td>
<td>Uncertainty</td>
<td>Dog</td>
</tr>
<tr>
<td>Fitness</td>
<td>Disability</td>
<td>Couch</td>
</tr>
<tr>
<td>Strength</td>
<td>Vulnerability</td>
<td>Sky</td>
</tr>
<tr>
<td>Ableness</td>
<td>Death</td>
<td>Book</td>
</tr>
<tr>
<td>Healthiness</td>
<td>Hospital</td>
<td>Theatre</td>
</tr>
<tr>
<td>Tranquillity</td>
<td>Pain</td>
<td>Shoes</td>
</tr>
</tbody>
</table>

Note: Translated from Greek.