Coping with an ego-threat: Monitoring and blunting during an intelligence test

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Abstract

This study investigated the predictive validity of the Miller Behavioral Style Scale (MBSS; Miller, 1987). Subjects had to work on an intelligence test. During this test, they could observe lights that informed them on how they were performing. There were two conditions: a low-stress condition (n = 37) in which the lights always indicated that the subject was performing well, and a high-stress condition (n = 33) in which the lights signalled a deterioration of performance. In general, little support was found for the predictive validity of the MBSS.

INTRODUCTION

A convincing amount of evidence suggests that coping strategies play an important role in the way that individuals respond to negative and threatening situations and life events (e.g. Lazarus and Folkman, 1984). During the last few decades, more and more researchers have made use of self-report questionnaires in order to assess styles of coping (for a review see Parker and Endler, 1992). A coping questionnaire that has attracted considerable attention is the Miller Behavioral Style Scale (MBSS; Miller, 1980; 1987). The MBSS is designed to identify two basic coping dimensions: monitoring, i.e. seeking information about the threatening situation, and blunting, i.e. avoiding threat-related information (for a review of the monitoring–blunting research, see Miller, Combs and Kruser, 1993).

The MBSS has been validated in laboratory settings (Miller, 1987). In a first experiment, Miller demonstrated that, under the threat of an electric shock, high-monitoring/low-blunting subjects chose to seek out information about its nature and onset, whereas low-monitoring/high-blunting subjects chose to distract themselves. In a second experiment, subjects worked on a cognitive task that presumably predicted success in college. During this task, subjects could attend lights that signalled their test performance. It was found that high-monitoring/low-blunting sub-

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jects frequently looked at the lights, whereas low-monitoring/high-blunting subjects tended to continue their task. These findings suggest that the MBSS is a valid instrument for predicting behavioural coping strategies in response to both physical and psychological threats.

In an attempt to replicate Miller's findings, Muris and colleagues (van Zuuren and Muris, 1993; Muris, van Zuuren and de Vries, 1994) carried out two laboratory experiments. In these experiments, subjects were threatened with quasi-medical stressors: bloody slides and a film about brain surgery. During anticipation of the stressors, subjects could choose between two behavioural coping options: information (monitoring) or music (blunting). Yet, in both studies coping behaviours turned out to be unrelated to MBSS monitoring and blunting scores. Several factors may be responsible for these negative findings. First of all, it can be argued that subjects experience no personal threat when viewing bloody slides or a film about brain surgery. Secondly, watching bloody slides or a film about brain surgery is an event that is controllable by simply looking away. In other words, subjects anticipated a controllable stressor, whereas MBSS scores pertain to uncontrollable situations (see Miller, 1980; 1987). A final factor applies to the MBSS itself. Whereas Miller (1987) used an MBSS with a dichotomous response format, both studies of Muris and colleagues (van Zuuren and Muris, 1993; Muris et al., 1994) employed a version with five-point scales.

This study aimed at investigating further the predictive validity of the MBSS. For ethical reasons it was decided not to confront subjects with a physical threat (e.g. an electric shock; see Miller, 1987, Experiment 1). Instead, a personal threat in another domain (an ego-threat) was chosen. Thus, the current experiment followed a study of Miller (1987, Experiment 2) in which subjects had to work on a computerized intelligence test. During the test they could observe lights that supposedly informed them about the quality and speed of their performance. Looking at the lights embodied monitoring behaviour, whereas ignoring the lights represented blunting behaviour. The study consisted of two conditions. The first condition, the low-stress condition, mimicked Miller's original experiment in which the lights always indicated that the subject was performing well. The second condition, the high-stress condition, was an extension of Miller's experiment and was included to study monitoring and blunting behaviour under heightened threat. In this condition, the lights signalled a deterioration in performance. In other words, the lights not only provided positive information, but also negative (more threatening) information. It was expected that monitoring (defined as seeking threat-relevant information) and blunting (defined as avoiding threat-related information) would become most clearly manifest in this high-stress condition. Subjects' habitual coping style was assessed using both the dichotomous and the five-point version of the MBSS.

METHOD

Subjects

Subjects were 70 introductory psychology students of the University of Amsterdam.

The idea for including such a condition comes from Miller (1987, p. 352) herself.
(51 women, 19 men). Their mean age was 21.0 years (SD = 2.5; range 18–29). Subjects participated in return for credit points.

**Questionnaires**

The *Miller Behavioral Style Scale* (MBSS; Miller, 1980; 1987) measures the tendency to seek out or avoid threat-relevant information in the context of four hypothetical stress scenarios (dentist, hostage, dismissal, and aeroplane). Each situation is followed by eight coping options. Half of these options are of a monitoring variety, the other half are of a blunting variety. The dichotomous version asks subjects to mark those options that are applicable to them (range for each subscale 0–16). The five-point version (cf. van Zuuren and Wolfs, 1991) asks subjects to indicate to what extent each option is applicable (1 = Not at all applicable, 5 = Very much applicable; range for each subscale 16–80).

Trait anxiety was measured with the *State–Trait Anxiety Inventory* (STAI; Spielberger, Gorsuch and Lushene, 1970). STAI-trait scores vary between 20 (Almost never anxious) and 80 (Almost always anxious).

**Materials and equipment of the laboratory room**

The cognitive task in the present study was a computerized *Raven Advanced Progressive Matrices* intelligence test (Raven, Court and Raven, 1988). The test consists of 48 items that become increasingly difficult. Each item has the format of a pattern that has to be completed. The subject chooses from eight options the one that fits most optimally in the pattern. Items were presented on a Macintosh computer screen and responses had to be given by means of a computer mouse. After each response the computer automatically presented the next item.

A green and a red light were attached to the wall behind the subject outside his/her peripheral vision. To see the lights, subjects had to turn their head. Since subjects were told that the lights signalled their test performance, the lights were connected with a clearly visible electric wire to a large computer, which was in turn connected with the Macintosh computer on which the subject performed the test. A small buzzer, fastened on the back of the large computer, was used to produce a tone (duration: 5 s; see below). Actually, both the lights and the buzzer were operated by the experimenter in the adjacent room.

**Procedure**

Upon arrival, subjects completed the dichotomous version of the MBSS and STAI. Then, they were led into the laboratory room and received audiotaped instructions. Subjects were randomly assigned to one of two conditions: a low-stress condition \( n = 37; 28 \text{ women, 9 men} \) and a high-stress condition \( n = 33; 23 \text{ women, 10 men} \). The instructions for the low-stress condition were largely taken from Miller (1987) and ran as follows:

'This cognitive computer task is a so-called Raven test. This test is often used in application procedures, because the test score is a good predictor of success. There are two factors that determine your test score. In the
first place, the correctness of your answers. Secondly, time is also an important factor: the faster you give the correct answers, the better your test score will be. Essentially, we want to know whether or not you are remaining in the top 25 per cent of the university student population. Because a large number of students have taken this test over the year, we can accurately predict the pattern of your performance. On the wall behind you, you can see two coloured lights: a red one and a green one. These lights are connected to our computer and give a general indication of how well you are doing in comparison with the average university student. The computer keeps a cumulative record of your score and compares your new score to the average every time you answer another item. If you are interested, you can follow how well you are doing by looking at the lights. If the green light burns it means that you are remaining in the top quarter. If the red light burns, however, it means that you have fallen below. Further, at a certain moment during the test you will hear a tone. This tone is generated by our computer and has no significance.’

The instruction for the high-stress condition was identical, with the exception of the meaning given to the tone: ‘This tone is generated by our computer and indicates that you are not only scoring below the top quarter, but also have fallen below the score of the average university student’.

Next, all subjects received additional instructions about the Raven test with the help of a test item that was presented on the computer screen. Then, subjects rated their level of pre-test tension on a 100 mm Visual Analogue Scale (VAS; 0 = Not at all tense, 100 = Extremely tense) and started the Raven test by answering the test item.

In both conditions, subjects were not informed about the duration of the test. Actually, all subjects were stopped after 14 min. The tone was produced after exactly 7 min. In the low-stress condition, the green light was illuminated shortly after the subject answered the first item and remained on throughout the test. In the high-stress condition, the green light was also switched on after answering the first item. However, just before the tone, the green light was switched off and the red one was illuminated for exactly one minute. After this minute, the red light was switched off and the green one was illuminated again.

During the test, the experimenter, who sat behind a two-way mirror, continuously recorded the number of times the subject looked at the lights. In addition, the experimenter measured latency, i.e. the time that elapsed between onset of the experiment and the moment that the subject first attended to the lights.

After the test, subjects rated tension during the test and post-test tension on two 100 mm VASs. In addition, a multiple-choice question was used to investigate the effect of the tone on the subject’s level of tension during the test (manipulation check): (a) the tone had no effect on my level of tension; (b) the tone increased my level of tension; (c) the tone decreased my level of tension. Thereafter, subjects completed the five-point version of the MBSS. Finally, they were debriefed.
RESULTS

Habitual monitoring and blunting coping styles

Table 1 presents the results of both MBSS versions. Mean MBSS scores of both the dichotomous and the five-point version were comparable to those found in other studies (e.g. Miller, 1987; Muris and van Zuuren, 1992). The internal consistency of the monitoring and blunting scales of the five-point version (M5/B5) was satisfactory: Cronbach’s α values were 0.75 and 0.71, respectively. However, Cronbach’s α values for both scales of the dichotomous version (M2/B2) were below acceptable limits: 0.44 for monitoring and 0.35 for blunting. Nevertheless, for reasons of comparison with the study of Miller (1987) the dichotomous data are presented hereafter.

Table 1. Statistics (upper part) and Pearson product-moment correlations (lower part) between the monitoring and blunting measures of the dichotomous (M2, B2, M2-B2) and five-point (M5, B5, M5-B5) versions of the MBSS, and trait anxiety (STAI) scores

<table>
<thead>
<tr>
<th></th>
<th>M2</th>
<th>B2</th>
<th>M2-B2</th>
<th>M5</th>
<th>B5</th>
<th>M5-B5</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>11.5</td>
<td>6.9</td>
<td>4.7</td>
<td>54.5</td>
<td>48.6</td>
<td>6.0</td>
</tr>
<tr>
<td>SD</td>
<td>2.1</td>
<td>2.2</td>
<td>3.4</td>
<td>8.4</td>
<td>8.0</td>
<td>10.2</td>
</tr>
<tr>
<td>Cronbach’s α</td>
<td>0.44</td>
<td>0.35</td>
<td>0.75</td>
<td>0.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B2</td>
<td>-0.26*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2-B2</td>
<td>0.79**</td>
<td>-0.80**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M5</td>
<td>0.76**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B5</td>
<td></td>
<td></td>
<td>0.50**</td>
<td>0.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M5-B5</td>
<td>0.78**</td>
<td>0.65**</td>
<td>-0.60**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAI</td>
<td>-0.04</td>
<td>-0.07</td>
<td>0.02</td>
<td>-0.04</td>
<td>-0.12</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Note: Only meaningful correlations are given. *p < 0.05; **p < 0.01.

As expected, dichotomous and five-point version scores were significant correlated (product-moment correlations): r(70) = 0.76, p < 0.001 for monitoring, r(70) = 0.50, p < 0.001 for blunting, and r(70) = 0.78, p < 0.001 for the summary score (calculated by subtracting blunting from monitoring scores). None of the monitoring/ blunting measures were related to trait anxiety as indexed by the STAI.

Manipulation check

T-tests revealed no significant differences between the high-stress and low-stress conditions, with respect to age, STAI, or any of the MBSS measures (all t(68) < 1).2

As expected, response to the tone differed among the two conditions. In the high-stress condition, 78.8 per cent of the subjects indicated on the multiple-choice question that the tone had increased their level of tension, whereas 21.2 per cent indicated that the tone had no effect on their level of tension. In the low-stress condition, these percentages were 48.7 and 51.3, respectively (χ²(1) = 6.8, p < 0.01).

1 Inspection of the Raven-test performances revealed that subjects had been working fast (the mean number of completed items was 36.4, SD = 6.0), whereas the frequency of incorrect answers was rather high (M = 12.2, SD = 8.2). No differences in test performance between the high-stress and low-stress conditions were found (both t(68) < 1).
Furthermore, subjects in the high-stress condition retrospectively rated their tension during the test as higher than subjects in the low-stress condition: means were 42.1 (SD = 23.0) and 32.9 (SD = 20.4), respectively (t(68) = 1.8, p < 0.05). For pre-test tension, directly measured after instructions were given, a tendency in the same direction was found: 39.0 (SD = 21.5) versus 31.5 (SD = 22.8) (t(68) = 1.4, p < 0.09). Post-test tension ratings did not differ among the two conditions: 28.3 (SD = 20.0) for the high-stress condition and 25.5 (SD = 21.2) for the low-stress condition (t(68) < 1).

**Situational coping behaviour in both conditions**

Subjects in the two conditions did not differ with respect to information-seeking behaviour during the test. First of all, no differences between the two conditions were found with respect to the mean number of times that subjects attended to the information lights. Subjects in the low-stress condition looked at the lights 9.4 times: 5.9 times before the tone and 3.4 times after the tone. High-stress condition subjects looked 6.4 times: 3.5 before the tone, and 2.8 times after the tone (t(68) values were −1.2 (p = 0.25), −1.5 (p = 0.13), and −0.5 (p = 0.63), respectively).

Secondly, mean latency times for the two conditions were highly comparable: subjects in the low-stress condition attended to the lights for the first time at 6.6 min, whereas those in the high-stress condition looked for the first time at 7.4 min (t(68) = 0.6, p = 0.54).

**Relation between habitual coping style and situational coping behaviour**

To investigate the relationship between habitual coping style and situational coping behaviour, Pearson product-moment correlations were computed for both conditions. As can be seen in the upper part of Table 2, in the low-stress condition, monitoring and summary scores were positively correlated with looking at the lights (M2, M2-B2, M5), and negatively with latency time (M2-B2, M5-B5). Blunting was negatively related to looking at the lights (B2) and positively to latency time (B2, B5).

Surprisingly, in the high-stress condition, no significant correlations between habitual coping style and situational coping behaviour emerged (see the lower part of Table 2).\(^2\)

In the high-stress condition, 16 subjects looked at the lights during the minute in which the red light was illuminated. One might expect that these subjects, in particular, are characterized by a high-monitoring/low-blunting coping style. However, \(t\)-tests showed that there were no differences on any coping measure between subjects who did look at the red light and those who did not look at the red light.

Furthermore, it appeared that the group of subjects who did look at the red light attended to the lights more frequently in the further course of the experiment than the group of subjects who did not look at the red light: means being 5.8 (SD = 5.8).

\(^2\) Following the suggestion of an anonymous reviewer, the relationship between MBSS scores on the dismissal scenario and situational coping behaviour was investigated in more detail. This was done because the dismissal scenario can be regarded as an ego-threat, whereas the other three MBSS scenarios pertain to physical threats. However, Pearson product-moment correlations between monitoring/blunting dismissal scores and situational coping behaviour computed for both conditions separately essentially produced the same pattern of results.
5.6) and 1.7 (SD = 3.5), respectively ($t(31) = 2.9$, $p < 0.01$). Pearson correlations were computed between coping-style measures and frequency of looking at the lights within these groups. Again, it was found that looking at the information lights was unrelated to habitual coping style.

Table 2. Pearson product-moment correlations between MBSS indices and situational coping in the low-stress condition ($n = 37$) and in the high-stress condition ($n = 33$)

<table>
<thead>
<tr>
<th></th>
<th>M2</th>
<th>B2</th>
<th>M2-B2</th>
<th>M5</th>
<th>B5</th>
<th>M5-B5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low-stress condition</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Looking at lights (before tone)</td>
<td>0.23*</td>
<td>-0.27*</td>
<td>0.34**</td>
<td>0.08</td>
<td>-0.10</td>
<td>0.13</td>
</tr>
<tr>
<td>Looking at lights (after tone)</td>
<td>0.34**</td>
<td>-0.25*</td>
<td>0.39***</td>
<td>0.23*</td>
<td>-0.05</td>
<td>0.19</td>
</tr>
<tr>
<td>Looking at lights (total)</td>
<td>0.29**</td>
<td>-0.28**</td>
<td>0.38**</td>
<td>0.15</td>
<td>-0.08</td>
<td>0.17</td>
</tr>
<tr>
<td>Latency time</td>
<td>-0.09</td>
<td>0.27*</td>
<td>-0.24*</td>
<td>0.07</td>
<td>0.41***</td>
<td>-0.26*</td>
</tr>
<tr>
<td><strong>High-stress condition</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Looking at lights (before tone)</td>
<td>0.13</td>
<td>0.12</td>
<td>0.01</td>
<td>0.08</td>
<td>-0.01</td>
<td>0.09</td>
</tr>
<tr>
<td>Looking at lights (after tone)</td>
<td>0.14</td>
<td>0.17</td>
<td>-0.01</td>
<td>0.07</td>
<td>-0.01</td>
<td>0.07</td>
</tr>
<tr>
<td>Looking at lights (total)</td>
<td>0.14</td>
<td>0.15</td>
<td>0.00</td>
<td>0.08</td>
<td>-0.01</td>
<td>0.08</td>
</tr>
<tr>
<td>Latency time</td>
<td>-0.17</td>
<td>-0.07</td>
<td>-0.06</td>
<td>-0.15</td>
<td>-0.06</td>
<td>-0.10</td>
</tr>
</tbody>
</table>

*Note*: *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$ (one-tailed).

**DISCUSSION**

The present study investigated the predictive validity of the Miller Behavioral Style Scale (MBSS; Miller, 1987) with respect to coping behaviour in case of an ego-threat. In the first condition (i.e. the low-tension condition), it was found that dichotomous MBSS scores were significantly correlated with situational coping behaviour: monitoring was positively related to information seeking, whereas blunting was negatively linked to information seeking. Furthermore, blunting was found to be positively related to latency time: the more subjects relied on the blunting coping style, the later they started to seek information. All in all, these findings represent a straightforward replication of the findings previously reported by Miller (1987; Experiment 2). However, the significance of this successful replication should be played down for two obvious reasons. First, whereas the reliability of the five-point MBSS was sufficient, the internal consistency of the dichotomous MBSS version turned out to be questionable. Meanwhile, the dichotomous MBSS version rather than the five-point version predicted coping behaviour under low-stress conditions. Second, in the high-stress condition, no associations were found between the dichotomous or five-point scale MBSS, on the one hand, and coping behaviour, on the other hand. One could argue that the failure of MBSS data to predict coping behaviour during stress might be due to the high-stress condition not being stressful enough. Yet, the VAS data showed that high-stress-condition subjects reported more tension than the low-stress-condition subjects. Although these self-report data should be interpreted with caution (because of demand characteristics, etc.), they do at least suggest that the high-stress condition was effective in inducing a heightened level of tension in subjects. To the extent that one is willing to accept that the high-stress condition...
did produce heightened tension, the finding that MBSS scores predicted behaviour under low rather than high stress casts doubts on the value of MBSS as an instrument for measurement coping behaviour.

An obvious limitation of the current study was that threatened information was presented in a highly specific context (i.e. an educational context). Therefore, the present findings do not rule out the possibility that the MBSS is able to predict coping behaviour when subjects are confronted with threatening information in other contexts (e.g. a medical context).

To summarize, this study found little support for the predictive validity of the MBSS (see also van Zuuren and Muris, 1993; Schumacher, 1990; Muris et al., 1994). Note further that the current findings are in line with those of other experimental studies, which also failed to demonstrate behavioural correlates of coping style measures (Kohlmann, 1993). All in all, this suggests that coping is not merely the reflection of a personality trait, and underscores the importance of a process approach to coping phenomenon (see e.g. Folkman and Lazarus, 1985). A final conclusion pertains to the reliability of the dichotomous MBSS. The results of the present study showed that the internal consistency of the dichotomous MBSS subscales was far too low. In a way, these results confirm the work of previous authors who found that the blunting scale of the dichotomous MBSS lacks internal reliability (Miller, 1992; van Zuuren, 1993). Taken together, these findings indicate that future studies should investigate and report on the reliability of the dichotomous MBSS.

REFERENCES


