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CITY UNIVERSITY OF HONG KONG

Multidimensional Perfectionism and Attentional Bias:

Implications in Everyday Life Settings

A Report Submitted to
Department of Applied Social Sciences
in Partial Fulfilment of the Requirements for
the Bachelor of Social Sciences in psychology

By

CHAN Wing Man, Nicole

April, 2016
Abstract

Perfectionism is generally being understood as a multi-facet personality construct and associated with several negative outcomes. One of them is attentional bias, the tendency for individual to selectively attend to a type of information while ignoring the others. Although this relationship has been replicated in several studies by Stroop task, it was unclear that whether this relationship could be generalized to everyday life. Current study attempted to examine this relationship by using dot probe task, a test designed specifically for studying this cognitive bias. In order to understand whether selective attention occurred when individual was processing events in daily life, hypothetical scenarios were used as stimuli. Results revealed that the relationship between perfectionism and attentional bias existed when individuals encountered everyday life scenarios. Besides, a surprising finding was that different dimensions of perfectionism also showed attentional bias to dimension-unrelated scenarios, suggesting possible common features among dimensions. Detailed discussion of the topic was presented below.

Keywords: Multidimensional perfectionism, attentional bias, dot probe task
Acknowledgments

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Multidimensional Perfectionism and Attentional Bias:

Implications in Everyday Life Settings

Chapter 1 - Introduction and Literature Review

1.1. Introduction

What is your understanding about the term ‘perfectionism’? Generally, people hold positive attitude towards this personality construct and considered being perfectionistic as having high standards in own work and strive for perfection in every aspects. However, this personality construct is not as ‘perfect’ as it sounds, and is proved to be associated with several maladaptive outcomes, one of which is the focus of current study, attentional bias. Perfectionists tend to selectively attend to negative information (Desnoyers, 2013). However, this relationship was only tested by using vocabularies and the existence of this association remained unknown in everyday life setting. Current study endeavors to contribute to this research gap by adopting everyday live scenarios as stimulus in dot probe task to examine whether attentional bias still exist under such circumstance.

1.2. Literature Review

In the field of psychology, perfectionism was a topic of widespread interest, yet there was no precise definition of it. Based on years of study on this construct, researchers
summarized 4 important features of a perfectionist: (1) setting excessively high standards for own performances and overly criticize oneself for not meeting own standards, (2) over concern for mistakes and failures, (3) tendency to doubt own performances and (4) placing high values on parental expectations and evaluations (Frost, Marten, Lahart & Rosenblate, 1990).

Setting high standards for oneself was also common among people who are highly competent (Frost, Marten, Lahart & Rosenblate, 1990). What made perfectionists different from highly competent people was that perfectionists not only aim at striving for perfection in every aspects, but also allowed little room for flaws. The expectations they have for their own performances were sometimes unrealistic and/or excessive (Hewitt & Flett, 2004). Most importantly, previous literature indicated that the tendency to set unrealistic goal itself did not make perfectionists distinct, but the overly self-criticism that they engaged in when they failed to meet their own high standards did (Frost, Marten, Lahart & Rosenblate, 1990; Dunkley & Blankstein, 2000). Setting excessively high standards for oneself and the tendency to be overly self-critical were common features among perfectionists, and were possible reasons behind the psychological problems associated with perfectionism, such as depression (Flett, Hewitt, Whelan & Martin, 2007).

Perfectionists were also known to ruminate about mistakes and failures (Flett, Hewitt, Whelan & Martin, 2007). This cognitive rumination was not simply because
perfectionists wanted to strive for achievement, but more was about their over concern about mistakes and the desire to avoid them. Perfectionists have a fear of failure and shame (Sagar & Stoeber, 2009). It was this fear that motivates perfectionists to strive for perfection so as to avoid the unpleasant feeling of failing.

Perfectionists were doubtful about own actions, especially in stressful situation (Wirtz et al., 2007). They were characterized by having a sense of uncertainty about whether the work was completely satisfactorily. This consistent worry about the quality of own performance was also a distinct feature of perfectionists.

Last but not least, perfectionists put great emphasis on parents’ expectation on them (Frost, Marten, Lahart & Rosenblate, 1990). They have a feeling that in order to receive love and approval, those standards set by parents must be met, thus making mistakes was not an option. From this characteristic of perfectionism, it was obvious that perfectionism was not only an intrapersonal construct, but also involved interpersonal element.

Researchers on this topic have developed several measures in understanding this personality construct. As mentioned previously, perfectionism consisted of both intra- and interpersonal dimensions. Thus, in order to understand perfectionism from a multifacet perspective, the Multidimensional Perfectionism Model by Hewitt and Flett (1990) was being adopted in the present study. This influential model sub-divides this personality construct into 3 different dimensions: self-oriented perfectionism, other-
oriented perfectionism, and socially prescribed perfectionism. This model emphasized the differences among the 3 dimensions of perfectionism; and the major difference among them was on whom that perfectionism was directed to (Mallinson & Hill, 2011).

**Self-oriented perfectionism (SOP)**

Self-oriented perfectionists were more similar to the ‘typical’ perfectionist we knew. It was an intrapersonal dimension and the perfectionistic tendency was directed to the self (Flett, Hewitt, Whelan & Martin, 2007). Characteristics of self-oriented perfectionists included setting unrealistically high standards for oneself, overly criticizing one’s own performances, motivated to attain perfection as well as avoid mistakes (Hewitt & Flett, 1991). Self-blame and self-criticism were common when self-oriented perfectionists failed to fulfill their own high standards (Hewitt & Flett, 1991; Hewitt, Flett, Besser, Sherry & Mcgee, 2003).

High SOP implied a mismatch between actual self and ideal self (Hewitt & Flett, 1991), and was found to be associated with some psychological problems such as distress, depression, anorexia and anxiety (Hewitt & Flett, 1991; Flett, Hewitt, Blankstein, & Gray, 1998).

**Other-oriented perfectionism (OOP)**

Hewitt and Flett (1990) shed light on the study of interpersonal dimension of perfectionism with their development of MPS. Self-oriented perfectionists tend to direct the need for perfection to oneself, while other-oriented perfectionists expect perfection
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from others. They set unrealistically high standards for other’s performance and require
perfection from others. People high in OOP were also likely to be hostile, authoritarian
and dominating (Hewitt & Flett, 2004). Failure in meeting their standards may result in
blames and criticism towards others (Hewitt & Flett, 1991).

A recent study on OOP found a unique positive association between OOP and dark
triad personality – narcissism, Machiavellianism and psychopathy (Stoeber, 2014). This
finding may help to explain the tendency for OOP high-scorers to exploit, manipulate
and to promote own self-worth by reducing others’ (Hewitt & Flett, 2004; Stoeber,
2014). Due to these features of OOP, it is not surprising that other-oriented
perfectionists have negative interpersonal relationships. OOP was also found to be

Socially prescribed perfectionism (SPP)

Socially prescribed perfectionism is an interesting dimension which involved both
intra- and interpersonal aspects. Socially prescribed perfectionists tended to perceive
others for imposing excessively high expectations and expecting perfection for their
performance, and they concerned a lot with other’s approval and meeting their standards
(Hewitt & Flett, 1991; Sherry, Hewitt, Besser, Mcgee & Flett, 2004). These
perfectionists have great fear of negative reaction, rejection and disapproval from
others. Thus when the perceived high standards could not be met, these perfectionists
would engage in self-blaming behaviors. Emotional problems such as depression and
anxiety were also common among this type of perfectionists (Hewitt & Flett, 1991). As this perfectionism dimension involved interpersonal component, failure in reaching the perceived standards may also lead to negative interpersonal problems (Dunkley & Blankstein, 2000).

While SOP was about a mismatch of actual and ideal self, SPP demonstrated a discrepancy between actual self and ought self. More importantly, this ought self was perceived to be imposed by others, making it even more uncontrollable than another 2 types of perfectionism.

Hewitt and Flett’s (1990) multidimensional model emphasizes on the association between perfectionism and maladjustment (Hewitt & Flett, 1991). This association was also being studied by several researchers. In Pacht’s (1984) famous study about perfectionism, he argued that perfectionism was not as ‘perfect’ as it sounded and was linked to several psychological and physical disorders, e.g. alcoholism, depression, anorexia, obsessive-compulsive personality disorder, etc. (Pacht, 1984; Frost, Marten, Lahart & Rosenblate, 1990). Besides of the classic study of Pacht (1984), some recent research also found that perfectionism was associated with psychopathology and maladaptive problems such as depression, insomnia, eating disorder, anxiety disorder, personality disorder, psychotic disorders and suicide (Shafran & Mansell, 2001; Hassan, Flett, Ganguli & Hewitt, 2014; Miloseva & Vukosavljevic-Gvozden, 2014; Lloyd, Schmidt, Khondoker & Tchanturia, 2015).
Attentional Bias

One reason for perfectionism to be related with various psychological problems is the cognitive distortion and biases in perfectionists (Rice, Bair, Castro, Cohen & Hood, 2003). As mentioned previously, perfectionists tended to ruminate and focused on negative aspects of an event (Flett, Hewitt, Whelan & Martin, 2007). This tendency to pay more attention to a specific type of stimulus than to others is known as attentional bias (Kobori & Tanno, 2012).

How does attentional bias developed? The following paragraph will use perfectionism as an example to demonstrate the development of this type of cognitive bias. According to the schema-based theory of Beck and Clark (1997), it first started with automatic processing of the presented stimulus. If the stimulus was being considered as threatening, the threat primal mode would be activated in the second stage and dominated information processing (Van Bockstaele et al., 2014). In the case of perfectionism, failure and mistakes are major threats (Kobori & Tanno, 2012). When perfectionists evaluate a stimulus as threatening, the threat primal mode will then affect overall processing of information, causing the perfectionists to selectively attend to the threatening stimulus but not other information, resulting in attentional bias.

Previous research using modified Stroop task to examine the relationship between perfectionism and attentional bias suggested that perfectionists tend to attend more to emotionally threatening words (e.g. failure) and thus result in slower responding time to
word colors when comparing with non-perfectionists (Lundh & Öst, 2001; Kobori & Tanno, 2012). Perfectionists were special not only because of the selective attention on negative content, but also their difficulty in focusing on more positive content, suggested by Hollender (1965). The problem in appreciating positive and solely focusing on negative made attentional bias a maladaptive feature in perfectionists.

An attentional bias to negative content would be harmful and may interrupt daily functioning of individuals. Previous studies have discovered the association between negative attentional bias and anxiety disorders (Puliafico & Kendall, 2006; Hakamata et al., 2010). The tendency to focus only on threatening information may cause the individual to overestimate the threatening component of current situation, causing them to feel more anxious about the situation, thereby affect their functioning.

To summarize, individuals develop attentional bias mainly to information that capture their emotional concerns (Lundh & Öst, 2001). And for perfectionists, the type of information that will successfully attract their attention will be those that are associated with actual or perceived error or failure (Kobori & Tanno, 2012).

1.3. Conceptual Framework & Hypotheses

In general, perfectionists are likely to pay more attention on negative or emotionally threatening stimulus, as mentioned in the above section. However, one must not forget that according to Flett and Hewitt (1991), there are 3 types of perfectionism, and the definition of ‘threats’ to them are different. For SOP, failing to strive for perfection is an
emotional threat. For OOP, others not being able to achieve their standards is perceived as failure to them. As for SPP, not attaining the perceived high standards set by others will be seen as emotionally threatening. Theoretically, different perfectionists would demonstrate selective attention to the threats associated with that specific type of perfectionism. To investigate the relationship between multidimensional perfectionism and attentional bias to the respective threats, dot probe task will be adopted in the present study.

Dot probe task was developed by MacLeod, Mathew & Tata (1986), specifically used to study selective attention. In the original study of dot probe task, a pair of visual stimuli (i.e. an emotional threatening stimulus and a neutral stimulus) were presented simultaneously. After the stimuli faded out, a dot probe would appear at the original location of either stimulus. Participants were required to press the button to indicate the location of the dot probe as soon as possible. The reaction time (RT) was recorded. The shorter the RT to dot probe indicated attentional bias to that stimulus. The basic principle behind the dot probe paradigm was that when the dot probe located on the location of threatening stimulus (i.e. congruent situation), the RT would be shorter. In contrast, RT would be longer in incongruent situation.

In the present study, a modified version of dot probe task would be introduced. 2 major changes were made. Instead of using word stimulus as the original study, short messages describing an everyday life scenario would be used to prompt the
perfectionistic tendency of participants. Also, the original negative vs. neutral paired stimuli would be replaced by negative vs. positive paired stimuli. The purpose of these modification was to highlight some of the existing research gaps of the topic. The relationship has not been studied under everyday life situation (Kobori & Tanno, 2012). Although the dot probe task was still a computer-based experiment, the use of everyday life scenario may help to shed some light on whether perfectionists would show attentional bias on failures and errors in reality. Previous study also suggested testing the relationship with positive stimulus. The multidimensional model highlighted the maladaptive features of perfectionism, however, one also needed to note that perfectionism had its positive side. For example, high in OOP was associated with dominance, but also leadership ability (Stoeber, 2014). The adoption of positive stimulus could thus investigate whether a positive selective attention also exist among perfectionists.

In the current study, 12 pairs of scenarios would be presented. To study the RT difference in responding to negative and positive stimulus respectively, the dot probe was designed to fall on negative stimulus (i.e. congruent) for 50% of time and on positive stimulus (i.e. incongruent) for remaining 50%. It was expected that perfectionists would show shorter RT in congruent situation and longer RT in incongruent situation. In order to eliminate possible confounding factor (i.e. position of scenarios), a total of 4 versions were designed. With Version 1 and 3, Version 2 and 4
as scenarios counterbalancing versions respectively. Since the only difference within the pair was the location (i.e. left/right) of dot probe, it is expected that there will be no significant differences in RT between Version 1 and 3, and Version 2 and 4 respectively (Assumption 1). Detail explanation of the 4 versions would be introduced in Chapter 2.

**Current Study**

The aim of current study is to further investigate the relationship between perfectionism and attentional bias. Besides of wanting to know whether attentional bias exists in processing everyday life scenarios, another significance of current study was to explore how OOP and SPP correlate with attentional bias, since most research on this topic focused solely on studying about SOP. Whether OOP and SPP are also associated with attentional bias should be further studied.

Based on previous research on perfectionism, it is hypothesized that high-scorers in OOP will show selective attention to the OOP-specific threatening scenarios, resulting in shorter RT comparing to low-scorers (Hypothesis 1). At the same time, they are also expected to have longer RT when encountering positive scenarios (Hypothesis 2). For high-scorers in SOP, it is expected that they show shorter RT in responding to SOP-specific negative scenarios (Hypothesis 3) and longer RT in positive scenarios when comparing to low-scorers in SOP (Hypothesis 4). Lastly, for high-scorers in SPP, shorter RT is expected in SPP-specific negative scenario comparing to low-scorers (Hypothesis 5). Longer RT to positive scenarios is also hypothesized when comparing
to low-scorers in SPP (*Hypothesis 6*). As mentioned previously, the 3 dimensions of perfectionism should be addressing to different emotional concerns. Thus, it is hypothesized that the negative attentional bias would only be observed in dimension-specific scenarios but not others (*Hypothesis 7*). The conceptual framework of current study is presented in Figure 1.

![Conceptual framework of current study](image)

*Figure 1. Conceptual framework of current study*
Chapter 2 - Method

2.1. Participants

Data was collected by convenience sampling through researcher’s social network. 120 Hong Kong university students who were capable in reading and understanding Chinese were recruited as participants (Male: 47, Female: 73; Mean age = 21.08). As there were 4 versions of experiment, participants were randomly divided into 4 groups and each experimental group consisted of 30 participants. Below are the distribution of participants in 4 versions respectively: Version 1 (Male: 7, Female: 23; Mean age = 20.97); Version 2 (Male: 7, Female: 23; Mean age = 21.43); Version 3 (Male: 21, Female: 9; Mean age = 20.77); Version 4 (Male: 12, Female: 18; Mean age = 21.17).

2.2. Materials

The whole study was administered online. A consent form was presented to the participants. The purpose, procedures, time required for the study, potential benefits and risks, and the rights of participant were clearly stated. Confidentiality of all information was also ensured to the participants. Researcher’s contact information was also provided in case the participants would like to know more details about the present study. Participants were required to give their consent before they could proceed to the next page.
Demographic information was also collected from participants. The study consisted of 2 parts. The first part was a questionnaire assessing participant’s perfectionistic tendency, the Multidimensional Perfectionism Scale. The second part was a dot probe task testing participant’s attentional bias. All materials were in Chinese. The rationale behind using Chinese materials was that when comparing first language (L1) to second language (L2), people generally responded faster to L1 words (Phillips, Segalowitz, O’Brien & Yamasaki, 2004), possibly because they were more familiar to their first language, thus less time was needed for information processing. Since RT of participants in dot probe paradigm was an important indicator of their attentional bias, Chinese was chosen as the language in administering the questionnaire and experiment. The Chinese version of questionnaire was obtained through back translation technique.

**Multidimensional Perfectionism Scale (MPS).** The MPS was developed by Hewitt and Flett (1990). The scale consisted of 45 statements, with 15 statements lying in each of the 3 dimensions: self-oriented perfectionism, other-oriented perfectionism and socially prescribed perfectionism. The statements in MPS were descriptions of these perfectionism dimensions, and participants were required to rate how well these statements described them on a Likert scale, scoring from 1 (Disagree) to 7 (Agree). The higher the rating, the more the participant considered the statement as describing him/her. Each perfectionism dimension consisted of 15 items, and below are the question numbers of respective items:

...
Self-oriented dimension: 1, 6, 8 (reversed item), 12 (reversed item), 14, 15, 17, 20, 23, 28, 32, 34 (reversed item), 36 (reversed item), 40, 42

Other-oriented dimension: 2 (reversed item), 3 (reversed item), 4 (reversed item), 7, 10 (reversed item), 16, 19 (reversed item), 22, 24 (reversed item), 26, 27, 29, 38 (reversed item), 43 (reversed item), 45 (reversed item)

Socially prescribed dimension: 5, 9 (reversed item), 11, 13, 18, 21 (reversed item), 25, 30 (reversed item), 31, 33, 35, 37 (reversed item), 39, 41, 44 (reversed item)

The Chinese version of MPS had a Cronbach’s $\alpha = .938$, indicating a high internal consistency among items. For subscales in MPS, SOP dimension yielded $\alpha = .954$, OOP dimension $\alpha = .885$, and SPP dimension $\alpha = .851$. Thus, the Chinese version of MPS could be consider as a reliable measure of multidimensional perfectionism.

**Dot probe paradigm.** The dot probe paradigm was designed to assess participant’s selective attention to threat (Koster, Crombez, Verschuere & De Houwer, 2004). In the dot probe task, participants were shown a pair of stimuli (i.e. 2 scenarios), with one negative and one positive scenario respectively. After the offset of stimuli, a dot probe would appear at the original location of either scenario. Participants were required to indicate the location (i.e. left/right) of the dot probe as fast as possible by pressing the button on keyboard. Left arrow indicated a leftward location of the dot probe while right arrow indicated opposite location. The presentation time of each pair of stimuli was set according to the global reading speed of normal unspaced Chinese characters at 239
characters/min (Bai, Liversedge, Zang & Rayner, 2008). A pilot test was administered before the official experiment in order to ensure the presentation time would not be too slow or too quick. 20 participants participated in the pilot test and their opinions were collected for further amendments on the stimulus. After analyzing pilot test participants’ data, 2 major changes were made. The presentation time of stimulus was amended. Instead of following the global reading speed data, the presentation time of scenarios was set according to participants’ opinions. Thus, the duration differed from pair to pair. Important wordings of the scenarios were also bolded in order to make them easier to process.

The experiment consisted of 12 trials, with 4 trials for SOP, OOP and SPP scenarios respectively. Trial 1-4 were designed for OOP, trial 5-8 for SOP, and trial 9-12 for SPP. Within the 4 trials, 2 of them were congruent (i.e. dot probe on negative scenario) while remaining 2 were incongruent (i.e. dot probe on positive scenario). The scenarios were all events that a university student might encountered. By using scenarios that would be familiar to participants, the effect of selective attention in everyday life could be better studied. The number of words in both scenarios were more or less the same, and the use of wordings were also similar despite of the words that imply negative or positive meanings. This setting could prevent participants from paying too much attention on either side because of reason other than attentional bias, e.g. a particular scenario was much longer and required more time to process.
In order to explore the RT differences in responding to positive and negative scenarios, 4 versions of experiment were designed. Version 1 and 3 would have the dot probe falling on same scenario in all 12 trials, so as Version 2 and 4. And the dot probe location of Version 1- Version 3 pair would be different from Version 2 – Version 4 pair. For example, if the dot probe in Version 1- Version 3 trial 1 fell on negative scenario, dot probe of Version 2- Version 4 trial 1 would fall on positive scenario. The RT on congruent and incongruent situation for each trial could be compared. High-scorers in perfectionism were expected to have shorter RT in congruent situation and longer RT in incongruent situation, as stated in the hypotheses.

To counterbalance the possible confounding variable (i.e. location of dot probe), Version 1 and 3 were designed for counterbalancing the position of dot probe. Positions of dot probe in all 12 trials were opposite in these versions (e.g. if Version 1- trial 1 was negative-positive pair and dot probe fell on the left, Version 3- trial 1 would be positive-negative pair with dot probe fell on the right). The dot probe would fall on the same scenarios for both versions, but the location of the dot probe would be opposite. Version 2 and 4 were also dot probe counterbalancing versions for each other.

The whole study was administered through Qualtrics. The RT of participants in the dot probe experiment was recorded to millisecond (ms).

2.3. Procedures

At the beginning of the study, participants were required to make consent about
undertaking the survey and experiment. Then they would be required to provide
demographic information (e.g. age, gender, GPA), which might be useful in further
analysis. Participants would then be proceeded to the survey part. The consent form
together with the Chinese version of MPS could be found in Appendix A. After
participants finished the questionnaire, instructions about the dot probe experiment
would be given. In order to ensure participants’ understanding about how to make their
responses, 2 test trials were given (Appendix B). A fixation cross appeared first (750
ms). After the cross faded, a pair of negative and positive stimulus appeared for 500 ms.
When the stimulus faded, a dot probe would appear at the location of either the left or
right stimulus. Participants were required to press the left or right arrow on the keyboard
to indicate the location of dot probe as fast as possible. Before the real experiment
began, instructions were given again to remind participants about what they should do
in the experiment. At the beginning of each trial, a fixation cross appeared at the middle
of the screen (750 ms) to alert the participants of the starting of trial. Then the set of
stimulus would appear with one scenario on the left and another on the right. The
presentation time differed according to the length of the scenarios. Since the
presentation time of each pair of stimuli varied, the duration of each pair would be
mentioned in Appendix C. After the stimuli faded out, a dot probe would appeared at
either left or right side. Participants were required to respond by clicking the left or right
arrow on the keyboard to indicate the location of dot probe. After receiving the
response, the experiment would automatically proceed to the next trial. The 4 versions of dot probe experiment could be found in Appendix D, E, F and G respectively.

2.4. Analysis

All data was inputted and analyzed using SPSS 22.0. For MPS scoring method, the ratings of participants would be summed up respectively according to the dimensions the items were in. The higher the score of a dimension, the more perfectionistic the participant was. To investigate assumption 1, independent sample $T$-tests were used between Version 1 and Version 3, Version 2 and Version 4. To investigate hypotheses 1 to 7, 3×2 factorial design ANOVA was conducted. Since Qualtrics could only record the ‘page submission time’ of each trial, RT needed to be derived manually. By subtracting presentation time of fixation cross and scenarios, the remaining would be the RT to the dot probe. The focus of current study was to find out whether levels of perfectionism would affect participants’ RT on positive or negative scenario. To make it simple, an interaction effect between them was expected to be found. The 3 perfectionism dimensions were re-grouped into 3 levels (i.e. high, moderate, low) respectively. Interaction effect between different levels of perfectionism × types of scenario (i.e. positive/negative) was explored.
Chapter 3 - Results

3.1. Descriptive Statistics

Table 1 and 2 showed the descriptive statistics of Chinese version of MPS and reaction time (RT) in the dot probe task experiment.

Table 1.
Descriptive statistics of MPS subscales

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
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</thead>
<tbody>
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<td>SOP</td>
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<td>99</td>
<td>71.78</td>
<td>17.10</td>
</tr>
<tr>
<td>OOP</td>
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<td>87</td>
<td>54.28</td>
<td>12.04</td>
</tr>
<tr>
<td>SPP</td>
<td>120</td>
<td>33</td>
<td>79</td>
<td>58.09</td>
<td>11.13</td>
</tr>
</tbody>
</table>

Table 2.
Descriptive statistics of reaction time in dot probe task trials

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
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<td>.33</td>
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<td>.01</td>
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<td>.42</td>
<td>.23</td>
</tr>
<tr>
<td>Trial 3</td>
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<td>.01</td>
<td>1.30</td>
<td>.45</td>
<td>.25</td>
</tr>
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<td>Trial 4</td>
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<td>.01</td>
<td>1.00</td>
<td>.31</td>
<td>.24</td>
</tr>
<tr>
<td>Trial 5</td>
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<td>.06</td>
<td>1.03</td>
<td>.34</td>
<td>.19</td>
</tr>
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<td>.01</td>
<td>1.11</td>
<td>.36</td>
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<td>.02</td>
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<td>.01</td>
<td>1.42</td>
<td>.47</td>
<td>.27</td>
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3.2. Counterbalancing of 4 versions of dot probe task

Independent sample t-tests were conducted to test assumption 1. The results of independent sample t-tests were shown in Table 3 and 4. Table 1 showed the results of Version 1 and 3. As stated in assumption 1, most of the trials in did not show significant
differences in RT. However, a significant difference in trial 2 RT for Version 1 ($M = .46, SD = .27$) and Version 3 ($M = .29, SD = .14$), $t(44.33) = 3.13, p < .01$ was found.

Table 3.

**Independent sample \( t \)-tests between Version 1 and 3 on Reaction time**

<table>
<thead>
<tr>
<th></th>
<th>Version 1</th>
<th>Version 3</th>
<th>( t )</th>
<th>df</th>
<th>( p )</th>
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<td>.97</td>
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<td>.34</td>
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<td>.41</td>
<td>1.22</td>
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<td>-.50</td>
<td>58</td>
<td>.62</td>
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</tbody>
</table>

**\( * * \)\( p < .01 \).**

Table 4 showed the \( t \)-tests results of Version 2 and Version 4. Similar to Version 1 and 3, no significant differences in RT were found in most trials. But a significant difference in RT was found in trial 1 between Version 2 ($M = .42, SD = .26$) and Version 4 ($M = .63, SD = .38$), $t(58) = -2.44, p < .05$. Thus, assumption 1 was only partly supported.

Although trial 2 and trial 1 showed significant RT mean differences in Version 1 and 3, Version 2 and 4 respectively, when combining the 4 versions together, the assumptions of ANOVA was met. Thus, the mild violation of assumption 1 did not affect the latter ANOVA analysis. However, more detailed explanation about the assumption violation would be presented in discussion section.
Table 4. 

Independent sample t-tests between Version 2 and 4 on Reaction time

<table>
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<td>.61</td>
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<td>.28</td>
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<td>.21</td>
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<td>.19</td>
</tr>
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<td>.25</td>
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<td>.27</td>
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</tbody>
</table>

*p < .05.

3.3. Relationship between Perfectionism, Types of scenarios and Reaction time

A 3×2 factorial design ANOVA was conducted to explore whether interaction effect existed between perfectionism × types of scenarios on RT. Perfectionism was studied in 3 dimensions: SOP, OOP and SPP. Each dimension consisted of 3 levels: high, moderate and low. As for types of scenarios, it consisted of 2 levels: positive and negative. The assumptions of ANOVA were tested using residual plots and Levene’s Test of Equality. Normality of residuals and homogeneity of variance were not violated. Results of each trial were summarized below.

OOP Trials (Trial 1-4)

Results of trial 1 to 4 were shown in table 5 to 8 respectively. In trial 1, no significant main effect was found in levels of OOP and types of scenario. However, when studied
together, a significant interaction effect was found between these two independent
variables (Figure 2). The relationship between SOP and SPP with the scenarios in this
trial was also explored. However, no significant main effect and interaction effect was
found (Table 5).

Table 5.

3×2 factorial design ANOVA – Differences in perfectionism level and type of scenario
on Trial 1 reaction time

<table>
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<tr>
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<th>SS</th>
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<th>p</th>
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<td>.20</td>
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<td>.15</td>
</tr>
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<td>1.06</td>
<td>.53</td>
<td>5.38</td>
<td>.01**</td>
</tr>
<tr>
<td>Error</td>
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<td>11.19</td>
<td>.10</td>
<td></td>
<td></td>
</tr>
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<td>.06</td>
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<td>.58</td>
</tr>
<tr>
<td>Error</td>
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<td>.11</td>
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<td>.17</td>
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<td>.17</td>
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<td>11.87</td>
<td>.10</td>
<td></td>
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</tr>
</tbody>
</table>

**p ≤ .01.

Table 6 showed the results of trial 2. A significant main effect in OOP was found.

Post hoc comparisons using the Tukey HSD test indicated the mean RT for the low-
scorers (\(M = .35, SD = .18\)) was significantly lower than the moderate-scorers (\(M = .50, SD = .25\)). No significant mean differences were found between high-scorers (\(M = .42, SD = .23\)) and low-scorers, and high- and moderate scorers. The main effect of types of
scenarios was also significant, indicating the RT in responding to positive scenario (\(M = .47, SD = .22\)) was significantly higher than negative scenario (\(M = .38, SD = .23\)).
The interaction effect was also significant (Figure 3).

Significant main effect was also found among levels of SOP, with Tukey HSD post hoc analysis found that the mean RT of moderate group \((M = .51, SD = .23)\) was significantly higher than the low group \((M = .34, SD = .19)\). The RT also differed between types of scenarios, with RT to positive scenario \((M = .47, SD = .22)\) significantly higher than to negative scenario \((M = .38, SD = .23)\). A significant interaction between these two variables was also found (Figure 4). When testing with SPP, a significant main effect was found between types of scenarios. No significant main effect was found among levels of SPP. Interaction effect was also not found.

Table 6.

3×2 factorial design ANOVA – Differences in perfectionism level and type of scenario on Trial 2 reaction time

<table>
<thead>
<tr>
<th>Variable</th>
<th>df</th>
<th>SS</th>
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<td>.35</td>
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<td>.00**</td>
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<td></td>
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</table>

*p ≤ .05; **p ≤ .01; ***p ≤ .001.

In trial 3 (Table 7), a significant main effect was found among different levels of OOP. Tukey HSD test showed that the high-scorers \((M = .55, SD = .28)\) had a
significantly higher RT than low-scorers ($M = .42, SD = .21$) and moderate-scorers ($M = .38, SD = .23$), while no significant difference was found between low and moderate group. Main effect was not significant between types of scenario. However, the effect of OOP modified the one of types of scenario and an interaction effect was found between these two variables (Figure 5).

No main effects among levels of perfectionism and types of scenario were found in SOP and SPP dimensions. However, a significant interaction effect was found in both dimensions with types of scenario (Figure 6 & 7), as showed in Table 7.

Table 7.
3×2 factorial design ANOVA – Differences in perfectionism level and type of scenario on Trial 3 reaction time

<table>
<thead>
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</table>

*p ≤ .05; **p ≤ .01.

In trial 4 (Table 8), no significant main effects were found in both levels of OOP and types of scenario. However, when looking into the interaction of these two variables, a significant interaction effect was found (Figure 8). When testing with SOP and SPP, no
significant main and interaction effects were found. In all OOP trials, interaction of

OOP × types of scenario was found. To summarize, hypotheses 1 and 2 were supported.

Table 8.

3×2 factorial design ANOVA – Differences in perfectionism level and type of scenario on Trial 4 reaction time

<table>
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*p ≤ .05.

SOP Trials (Trial 5-8)

When examining SOP × types of scenario in trial 5 (Table 9), although Levene’s test showed that the homogeneity of variance may not be assumed, the violation of assumption was only moderate. The current study was a relatively balanced design, thus ANOVA was still robust to moderate violation of homogeneity assumption (Kao & Green, 2008).

Significant main effect was not found in different levels of SOP, however, main effect of types of scenario was significant, indicating that RT to positive scenario ($M = .40$, $SD = .20$) was significantly higher than negative scenario ($M = .28$, $SD = .15$). A significant
interaction effect was also observed between SOP and types of scenario (Figure 9).

When testing the another 2 dimensions of perfectionism, in OOP × scenarios, only significant main effect in types of scenario was found, with RT in positive scenario higher than negative scenario. In SPP × scenarios situation, significant main effect in types of scenario was discovered. RT in positive scenario was higher than that of negative one. Also, a significant SPP × types of scenarios interaction effect was found (Figure 10).

Table 9.

3×2 factorial design ANOVA – Differences in perfectionism level and type of scenario on Trial 5 reaction time

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***p ≤ .001.

In trial 6 (Table 10), no significant main effect was found in different levels of SOP. However, the main effect of types of scenario was significant. The RT to positive scenario ($M = .41, SD = .24$) was significantly higher than negative scenario ($M = .32, SD = .19$). The interaction between SOP and types of scenario was also significant.
In OOP × scenarios situation, main effect of OOP and types of scenario was significant. The post hoc analysis indicated that high-scorers in OOP ($M = .45, SD = .26$) had a significantly higher RT than low-scorers ($M = .32, SD = .20$) and moderate-scorers ($M = .32, SD = .17$). RT to positive scenario was also significantly higher than negative scenario. The interaction between these two variables was also significant (Figure 12). In SPP × scenarios situation, the only significant main effect was types of scenario, with RT in positive scenario higher than negative one. The interaction effect between SPP and scenarios was significant (Figure 13).

Table 10.  
3×2 factorial design ANOVA – Differences in perfectionism level and type of scenario on Trial 6 reaction time

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*p ≤ .05; ***p ≤ .001.

In trial 7 (Table 11), no significant main effect was observed in levels of SOP, but the main effect was significant in types of scenario, with RT in positive scenario ($M$
MULTIMENSIONAL PERFECTIONISM AND ATTENTIONAL BIAS

= .43, \( SD = .26 \) higher than negative scenario (\( M = .31, SD = .22 \)). SOP \( \times \) types of scenarios interaction was also found to be significant (Figure 14). In OOP \( \times \) types of scenarios situation, the only significant result was the main effect of types of scenario, with positive scenario RT higher than negative scenario. In SPP \( \times \) types of scenarios, RT in positive scenario was significantly higher than negative scenario, however, main effect in levels of SPP was not significant. The interaction between these two variables was significant (Figure 15).

Table 11.

3\( \times \)2 factorial design ANOVA – Differences in perfectionism level and type of scenario on Trial 7 reaction time

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\*\( p \leq .05 \); \**\( p \leq .01 \).

In trial 8 (Table 12), no significant main effect was found among different levels of SOP. However, the main effect of types of scenario was significant, RT of positive scenario (\( M = .54, SD = .29 \)) was higher than negative scenario (\( M = .40, SD = .24 \)). The interaction of SOP \( \times \) scenarios was also significant (Figure 16). In OOP \( \times \) scenarios
situation, the only significant effect was the main effect of types of scenario, with positive scenario RT higher than negative one. In SPP × scenarios situation, significant main effect in types of scenarios was also found. The interaction effect between SPP and scenarios was significant (Figure 17). In the above 4 SOP trials, the expected SOP × types of scenario interaction was found. Thus, hypotheses 3 and 4 were supported.

Table 12.

| 3×2 factorial design ANOVA – Differences in perfectionism level and type of scenario on Trial 8 reaction time |
|-----------------|-----|-----|-----|-------|-----|
|                 | df  | SS  | MS  | F    | p    |
| SOP             | 2   | .05 | .02 | .34  | .71  |
| Type of scenario| 1   | .50 | .50 | 7.70 | .01**|
| SOP* Type of scenario | 2   | .92 | .46 | 7.02 | .00***|
| Error           | 114 | 7.47| .07 |
| OOP             | 2   | .11 | .06 | .78  | .46  |
| Type of scenario| 1   | .54 | .54 | 7.59 | .01**|
| OOP* Type of scenario | 2   | .26 | .13 | 1.85 | .16  |
| Error           | 114 | 8.04| .07 |
| SPP             | 2   | .02 | .01 | .12  | .89  |
| Type of scenario| 1   | .48 | .48 | 6.91 | .01**|
| SPP* Type of scenario | 2   | .55 | .27 | 3.94 | .02**|
| Error           | 114 | 7.89| .07 |

**p ≤ .01; ***p ≤ .001.

**SPP Trials (Trial 9-12)**

Results of trial 9 was shown in Table 13. A significant main effect in types of scenario was found in trial 9 SPP × scenarios situation. The RT in positive scenario ($M = .57, SD = .28$) was significantly higher than negative scenario ($M = .47, SD = .22$). A significant interaction effect was also observed between SPP and types of scenarios (Figure 18). In OOP × scenarios situation, only the main effect of types of scenario was found.
significant, with RT in positive higher than that of negative one. In SOP × scenarios situation, significant main effect in types of scenario was also found, with the direction of RT difference same as SPP and OOP pair. Moreover, a significant interaction effect of SOP × types of scenario was found (Figure 19).

Table 13.
3×2 factorial design ANOVA – Differences in perfectionism level and type of scenario on Trial 9 reaction time

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*p ≤ .05.

In trial 10 (Table 14), no significant main effects was found. However, the interaction effect of levels of SPP × types of scenario was found to be significant (Figure 20).

Besides of SPP, SOP × types of scenario also showed significant interaction effect (Figure 21), as indicated in the result table.

In trial 11 (Table 15), as indicated in the result table, no main effects were discovered. Among 3 types of perfectionism, only SPP was found to have significant interaction effect with types of scenario (Figure 22).
Table 14.
3×2 factorial design ANOVA – Differences in perfectionism level and type of scenario on Trial 10 reaction time

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*p ≤ .05; *** p ≤ .001.

Table 15.
3×2 factorial design ANOVA – Differences in perfectionism level and type of scenario on Trial 11 reaction time

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*** p ≤ .001.
In the last trial (Table 16), RT in positive scenario ($M = .43, SD = .23$) was significantly higher than negative scenario ($M = .32, SD = .18$). No significant main effect was found in different levels of SPP, but the interaction between SPP and types of scenario was significant (Figure 23). In OOP × types of scenario, only significant main effect in types of scenario was found, with positive scenario RT higher than negative one. In SOP × types of scenario situation, main effect of types of scenario was significant. Main effect on different levels of SOP was also significant. The Tukey HSD post hoc analysis found that RT of high-scorers ($M = .43, SD = .25$) was significantly higher than low-scorers ($M = .30, SD = .15$). The interaction of these two variables was significant (Figure 24). To summarize, significant SPP × types of scenario interaction was found in all SPP trials. Thus, hypotheses 5 and 6 were supported.

Table 16.
3×2 factorial design ANOVA – Differences in perfectionism level and type of scenario on Trial 12 reaction time

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<td>.76</td>
<td>.38</td>
<td>10.95</td>
<td>.00***</td>
</tr>
<tr>
<td>Error</td>
<td>114</td>
<td>3.97</td>
<td>.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OOP</td>
<td>2</td>
<td>.05</td>
<td>.02</td>
<td>.57</td>
<td>.57</td>
</tr>
<tr>
<td>Type of scenario</td>
<td>1</td>
<td>.30</td>
<td>.30</td>
<td>7.18</td>
<td>.01**</td>
</tr>
<tr>
<td>OOP* Type of scenario</td>
<td>2</td>
<td>.17</td>
<td>.09</td>
<td>2.03</td>
<td>.14</td>
</tr>
<tr>
<td>Error</td>
<td>114</td>
<td>4.77</td>
<td>.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOP</td>
<td>2</td>
<td>.29</td>
<td>.14</td>
<td>4.16</td>
<td>.02*</td>
</tr>
<tr>
<td>Type of scenario</td>
<td>1</td>
<td>.26</td>
<td>.26</td>
<td>7.52</td>
<td>.01**</td>
</tr>
<tr>
<td>SOP* Type of scenario</td>
<td>2</td>
<td>.78</td>
<td>.39</td>
<td>11.26</td>
<td>.00***</td>
</tr>
<tr>
<td>Error</td>
<td>114</td>
<td>3.94</td>
<td>.04</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p ≤ .05; **p ≤ .01; ***p ≤ .001.
Surprisingly, as presented in the ANOVA tables, for some trials, more than one type of perfectionism dimension showed significant interaction effect with the scenarios. This finding was not expected previously and was not consistent with hypothesis 7.

Thus, hypothesis 7 was not supported.
Chapter 4 - Discussion & Conclusion

4.1. Discussion

The current study found that attentional bias on negative stimulus did exist when participants were processing scenarios similar in everyday life. This phenomenon could be observed in SOP, OOP as well as SPP. When looking into the interaction plots of perfectionism × types of scenario, it could be clearly seen that no matter in SOP, OOP or SPP dimensions, the higher the score for perfectionism, the shorter the RT to negative scenario and longer the RT to positive scenario. While for low-scorers, the pattern was reversed. Thus, in the interaction plots, an ‘X’ shaped could be observed. Besides of being able to find the expected results and support the hypotheses, some interesting results were also observed. In some trials, not only the designated type of perfectionism showed significant results, but also the other 2 supposed-to-be not related perfectionism dimension. More detailed discussion about the current findings will be presented in the following. However, before discussing about these major findings, the counterbalancing assumption violation would be tackled first.

Assumption 1 of the current study was mildly violated. In the 2 pairs of counterbalancing versions, the mean RT was found to be significantly different in trial 1 and 2. Mean RT of trial 2 of Version 1 ($M = .46$, $SD = .27$) was significantly longer than Version 3 ($M = .29$, $SD = .14$). And the mean RT of trial 1 of Version 4 ($M = .63$, $SD$...
= .38) was significantly longer than Version 2 (\(M = .42, SD = .26\)). When looking into trial 1 and 2 of these versions, it was discovered that in versions that have longer RT (i.e. Version 1 and Version 4), they shared a common characteristic, which was the location of dot probe. For trial 2 in Version 1 and trial 1 in Version 4, the dot probe was on the right. Two possible explanations together may explain this finding: the order of trials and reading habit of Chinese students. As these two trials were presented at the very beginning of the experiment, it was possible that participants were still at the stage of warming-up. When they were not familiarize to the experiment, their performances might be affected by other factors such as reading habit of students. Chinese writing system has evolved from top-to-bottom to left-to-right horizontally in the past 50 years (Chan & Bergen, 2005). When participants were new to the experiment, the processing time of scenarios might be longer as they were at a ‘warm-up’ stage. And as they habitually focus on the left first, less time was given to process the right stimulus. When the dot probe appeared at the right side, The RT would be longer, resulting in the significant difference in mean RT in the counterbalancing versions.

Let’s bring back to the discussion of the important findings of current study. As mentioned previously, in the significant interaction plots, an ‘X’ shaped graph is observed, stating that higher the score in perfectionism, the shorter the RT to negative stimulus and longer RT to positive ones. On the contrary, those score lower in perfectionism tend to respond faster to positive stimulus and have longer RT to negative
Current findings were in line with previous research that perfectionists have attentional bias on failure and errors. Besides of SOP, which is frequently being studied, OOP and SPP also showed to have association with attentional bias on imperfections. A major distinction between perfectionists and non-perfectionists was the ability to shift attention away from mistakes and errors. People were wired to have the innate ability to focus on both threatening and reinforcing stimuli, with the attentional system defaulted to focus on reward-relevant information (Frewen, Dozois, Joanisse & Neufeld, 2008). When a threat was presented, the occurrence of it would activate the analysis of that stimulus. If it was perceived as threatening, it may interrupt the original attentional system, causing the person to shift attention and focus on the threat. This shift of attention has evolutionary importance since it can protect the person from danger.

In the current study, positive and negative stimulus were presented simultaneously. According to a recent research on attentional bias, individuals were more likely to engage in protective attentional bias, which was the shifting away from negative information (Pintzinger, Pfabigan, Tran, Kryspin-Exner & Lamm, 2016). Referring to the interaction plots of current findings, longer RT was found in low-scorers in SOP, OOP and SPP in negative scenarios, and shorter RT was found among them when dot probe was on the side of positive scenarios. Due to the protective attentional bias in normal individuals, non-perfectionists tend to avoid negative scenarios. Thus, these
threatening stimuli were less likely to interrupt the default reward-approaching attentional system, making them more likely to focus their attention on positive scenarios comparing to high-scorers in perfectionism, thereby explaining the faster reaction time to positive scenarios in the low-scorers of perfectionism.

For high-scorers in SOP, OOP and SPP, as mentioned in Chapter 1, they tended to have selective attention on threatening information that fit their emotional concerns, which are mistakes and failures. Perfectionists not only have a tendency to increase their attention towards mistakes, but also have difficulty in focusing on error-free information (Frost et al., 1997; Kobori & Tanno, 2012). Hollender (1965) suggested that perfectionists were often focusing their attention on what is wrong, while ignoring those that were right. This characteristic of perfectionists helped explaining the findings of current study. As perfectionists have selective attention to negative scenarios, the RT to these emotionally threatening stimuli were shorter than the non-perfectionists (i.e. low-scorers). However, when the dot probe fell on the side of positive scenario, since high-scorers in perfectionism have difficulty in focusing on positive information and tended to ruminate about negative information, the RT would be longer comparing to low-scorers in perfectionism. To summarize, the characteristics of perfectionists and non-perfectionists together create an ‘X’ shaped graph that can be observed in the interaction plots of current study.

An interesting finding was discovered in current study. Hypotheses 1 to 6 originally
expected the 3 dimensions of perfectionism to have RT difference only in the scenarios designed specifically for that dimension. However, results violated hypothesis 8 and found that besides of showing significant interaction effect in their own trials, SOP, OOP and SPP also showed significant interaction effects with types of scenarios in trials designed for other types of perfectionism. This situation was not rare in current study, as shown in the ANOVA tables.

To explain this effect, one must be aware that although perfectionism can be divided into 3 different dimensions which have different characteristics, this does not mean that they are distinct and uncorrelated with each other. By performing a Pearson’s $r$ correlation, it was found that SOP, OOP and SPP were significantly correlated with each other (Table 17).

Table 17. 

<table>
<thead>
<tr>
<th>Pearson’s $r$ between SOP, OOP and SPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SOP</td>
</tr>
<tr>
<td>2. OOP</td>
</tr>
<tr>
<td>.34**</td>
</tr>
<tr>
<td>3. SPP</td>
</tr>
<tr>
<td>.61**</td>
</tr>
<tr>
<td><strong>.26</strong></td>
</tr>
</tbody>
</table>

**$p \leq .01$**

This finding suggested that SOP, OOP and SPP were inter-correlated to some extent. Although according to current definition of multidimensional perfectionism by Hewitt and Flett (1990), these 3 dimensions should be addressing different types of perfectionists, they may actually share some common features with each other, leading to the moderate correlations among them, as showed in the correlation matrix. When
looking into each correlation, the association between SOP and SPP was quite strong.

To recap the distinction between SOP and SPP, SOP people were those who imposed unrealistic standards on oneself, while SPP people tended to perceive significant others for imposing high standards on them. Although their nature seem different, there is one thing in common: when perfectionists in both dimensions encountered failure, they may engage in self-blame and self-criticism. This shared characteristic not only explained the correlation between 2 dimensions, but also implied that the 3 dimensions in the multidimensional perfectionism model were not as distinct as it proposed to be.

This can help explain why in some trials, the dimensions of perfectionism other than the designated one also showed attentional bias to negative scenarios. It is possible that the scenarios presented in those trials included words that were also being perceived as emotionally threatening by other perfectionism dimensions, causing those perfectionists to exhibit attentional bias as well. As mentioned above, the 3 dimensions seemed to be correlated with each other. The possible common features among them maybe an alternative explanation of why certain trials evoked attentional bias in more than one dimensions. Perhaps that specific scenario addressed the emotional concern shared by SOP, OOP and SPP. In order to know whether such common characteristics do exist, further research using these specific scenarios should be carried out.

4.2. Limitations and Further Studies

Below are some limitations of current study. First, in order to ensure the consistency
between original and Chinese version of MPS, factor analysis should be carried out to examine whether the Chinese version still consists of the 3 dimensions of perfectionism as the original version does. However, due to the restriction of time and sample size, the current study could not do so. The validation of Chinese version of MPS should be done in future research.

Second, as mentioned at the beginning of this study, one of the significance of study was to investigate whether attentional bias exists in everyday lives. By using scenarios as stimulus, current study have contributed to the understanding of attentional bias in everyday lives setting. In current study, scenarios were used as dot probe task stimulus to test for attentional bias. Although a pilot test was conducted before the official start of experiment to adjust the presentation time of stimulus, it should be noted that the reading speed of participants might differ. The individual difference in reading speed may still affect the accuracy of reaction time in the dot probe task. Moreover, current study only discovered that perfectionists showed attentional bias to a type of scenario, it was not clear which part of the scenario that the participant attended to. Thus, in order to contribute more detailed information to current topic, future research may consider adopting alternative experimental method in studying this topic. One possible alternative may be eye-tracking machine. Eye-tracking technique can be used in many types of visual stimuli, including words (Armstrong & Olatunji, 2012). By tracking the eye movement and fixation time on each stimulus, more detailed information about
which part of the scenario attracted most attention can be retrieved.

Third, in order to collect more data within a short period of time and made the experiment convenient to participants, the study was administered online and participants could do it under any environment. The possible confounding factors from the environment (e.g. resolution of computer screen, speed of Internet connection) could not be controlled. The above mentioned factors might affect reaction time recorded by Qualtrics. To improve this situation, future studies using dot probe task might consider controlling these factors by administering the experiment in a laboratory. By doing so, possible environmental confounding could be minimized.

Another suggestion for further study was mentioned briefly in the discussion section. As mentioned before, SOP, OOP and SPP were shown to be correlated with each other. It is possible that these 3 types of perfectionism actually shared some common features. Further research should work on discovering possible linkage among these perfectionism dimensions and provide further modification to the existing multidimensional perfectionism model if possible.

4.3. Conclusions

Current study examined the relationship between multidimensional perfectionism (i.e. SOP, OOP and SPP) and attentional bias in everyday live settings. By using the dot probe task experiment, results found that when processing everyday live scenarios, attentional bias still existed and the tendency of perfectionists was to selectively focus
on negative scenarios that were ‘threatening’ to them. This phenomenon occurred in all types of perfectionists. More interestingly, it was also found that perfectionists not only showed attentional bias to negative scenarios of their own dimension, but also to scenarios of other perfectionism dimensions. It is suggested that there may be some underlying features that are shared by the 3 types of perfectionism that lead to this surprising finding.

Attentional bias is observed in current study which adopted daily scenarios, more attention should be pay on this issue. Too much attention focusing on negative information may lead to psychological problems such as fear and anxiety (Van Bockstaele et al., 2014; Pergamin-Hight, Naim, Bakermans-Kranenburg, van IJzendoorn & Bar-Haim, 2015). This may greatly affect perfectionists’ daily functioning. To improve this situation, it is suggested that effective coping should be introduced to perfectionists. Mindfulness is an approach that has been shown to be effectively reducing rumination on negative information in perfectionists; and increasing mindfulness might be useful in reducing perfectionism (Hinterman, Burns, Hopwood & Rogers, 2012). Reducing perfectionism may help to improve the negative attentional bias, thereby helping perfectionists to function better without always focusing on ‘what is wrong’ rather than ‘what is right’.
References


本人是香港城市大學心理學 Year 4 的學生，正在進行一份關於完美主義及注意偏向之關係的研究，主要希望透過本研究了解不同類型的完美主義者的注意偏向趨向，調查對象為能閱讀中文的香港大學生。此實驗約需時 15-20 分鐘，感謝您的撥冗參與。你可以自由決定是否參與本研究，亦可以在中途放棄填寫。本研究採不記名方式作答，因此不會對您造成任何風險，敬請安心作答。如對本研究有任何疑問，或對研究結果有興趣，可透過電話或電郵聯絡本人：

我已明白我的權利，並可開始作答。
性別:
- 男
- 女

年齡：________________

大學年級:
- Year 1
- Year 2
- Year 3
- Year 4
- 其他，請說明：__________________________

大學主修科:
- 社會科學學院
- 工程學系
- 法律系
- 工商管理學系
- 文學院
- 理學院
- 政治與公共行政學系
- 醫學院
- 其他，請說明：_________________________________

GPA:
- 0.00-0.99
- 1.00-1.99
- 2.00-2.99
- 3.00-3.49
- 3.50-3.99
- > 4.00
請選取你認為最能形容你的答案。

1. 當我在做某些事的時候，直到我認為我的成品是完美前，我也不能放鬆。

   不同意                                  同意
   1  2  3  4  5  6  7

2. 我不會批評那些我認為太容易放棄的人。

   不同意                                  同意
   1  2  3  4  5  6  7

3. 我身邊的人成不成功對我而言並不重要。

   不同意                                  同意
   1  2  3  4  5  6  7

4. 即使我的朋友接受了遜於最理想的選擇，我也不會因此批評他們。

   不同意                                  同意
   1  2  3  4  5  6  7

5. 達到別人對我的期望，於我來說十分困難。

   不同意                                  同意
   1  2  3  4  5  6  7

6. 做任何事都達到完美是我的其中一個目標。

   不同意                                  同意
   1  2  3  4  5  6  7

7. 其他人做的任何事都必須達到一流的水準。
我從不期望自己的工作成果是完美的。

不同意  同意
1  2  3  4  5  6  7

即使我偶然犯錯,我身邊的人也能夠接受。

不同意  同意
1  2  3  4  5  6  7

要是我身邊的人不能做到最好,那也是不要緊的。

不同意  同意
1  2  3  4  5  6  7

我做得愈好,別人對我的期望就愈高。

不同意  同意
1  2  3  4  5  6  7

我很少覺得我需要變得完美。

不同意  同意
1  2  3  4  5  6  7

我做任何事如果不是最優秀,就會被周遭的人視為表現差。

不同意  同意
1  2  3  4  5  6  7
14. 我力求做到完美。
不同意 同意
1 2 3 4 5 6 7

15. 在任何我做的事上都達到完美，於我而言是非常重要的。
不同意 同意
1 2 3 4 5 6 7

16. 我對我重視的人有很高的期望。
不同意 同意
1 2 3 4 5 6 7

17. 我做任何事都會努力成為最好的那一個。
不同意 同意
1 2 3 4 5 6 7

18. 我身邊的人期望我在所有事上都能取得成功。
不同意 同意
1 2 3 4 5 6 7

19. 我不會對身邊的人有很高的要求。
不同意 同意
1 2 3 4 5 6 7

20. 我要求自己必須做到完美。
不同意 同意
21. 即使我不是每件事都在行，別人仍然會喜歡和接受我。
不同意 同意

22. 我不能忍受那些沒有致力去完善自己的人。
不同意 同意

23. 我不能接受我的工作上有瑕疵。
不同意 同意

24. 我不會對朋友有太多要求。
不同意 同意

25. 成功代表我需要加倍努力去取悅他人。
不同意 同意

26. 如果我要求別人做某件事，我期望那人能毫無瑕疵地完成它。
不同意 同意

27. 我不能忍受身邊的人犯錯。
28. 我所訂立的目標必須完美無瑕。
不同意 同意

29. 我身邊的人永遠不應令我失望。
不同意 同意

30. 即使我不成功時，別人也會接受我。
不同意 同意

31. 我覺得別人對我要求過高。
不同意 同意

32. 我在任何時候都必須做到最好。
不同意 同意

33. 即使別人不說，我也知道在我犯錯時，他們感到不悅。
不同意 同意
34. 我不需要在所有事上都成為最好的一個。

不同意 同意
1 2 3 4 5 6 7

35. 我的家人期望我能達致完美。

不同意 同意
1 2 3 4 5 6 7

36. 我不會對自己有特別高的要求。

不同意 同意
1 2 3 4 5 6 7

37. 我的父母很少期望我在生活上的每一方面都勝過他人。

不同意 同意
1 2 3 4 5 6 7

38. 我尊重較為平凡的人。

不同意 同意
1 2 3 4 5 6 7

39. 別人期望我能做到完美。

不同意 同意
1 2 3 4 5 6 7

40. 我為自己訂立了極高的標準。

不同意 同意
41. 別人對我的期望高於我能力所能達到的。
不同意 同意

42. 無論在學校或職場上，任何時候我也必須成功。
不同意 同意

43. 即使我的摯友做事時沒有盡力，我也不介意。
不同意 同意

44. 就算我犯了錯，我身邊的人仍然認為我是能幹的。
不同意 同意

45. 我很少期望別人做任何事都擅長。
不同意 同意
Appendix B

Test Trial 1

[Diagram with a plus sign and two smiley faces on a white background]
Test Trial 2
## Appendix C

<table>
<thead>
<tr>
<th>Trial number</th>
<th>Presentation time of paired stimuli</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment trial 1</td>
<td>4000 ms</td>
</tr>
<tr>
<td>Experiment trial 2</td>
<td>4000 ms</td>
</tr>
<tr>
<td>Experiment trial 3</td>
<td>5500 ms</td>
</tr>
<tr>
<td>Experiment trial 4</td>
<td>4000 ms</td>
</tr>
<tr>
<td>Experiment trial 5</td>
<td>3500 ms</td>
</tr>
<tr>
<td>Experiment trial 6</td>
<td>5000 ms</td>
</tr>
<tr>
<td>Experiment trial 7</td>
<td>5000 ms</td>
</tr>
<tr>
<td>Experiment trial 8</td>
<td>5500 ms</td>
</tr>
<tr>
<td>Experiment trial 9</td>
<td>5500 ms</td>
</tr>
<tr>
<td>Experiment trial 10</td>
<td>5500 ms</td>
</tr>
<tr>
<td>Experiment trial 11</td>
<td>6000 ms</td>
</tr>
<tr>
<td>Experiment trial 12</td>
<td>7000 ms</td>
</tr>
</tbody>
</table>
Appendix D

Version 1 - Trial 1

+ 

在一份小組專題研習中，你的組員負責的部分出現了瑕疵。

在一份小組專題研習中，你的組員負責的部分順利完成了。

●
你們正在進行小組討論，但你的組員沒有專注地投入討論中。

你們正在進行小組討論，而你的組員亦有認真地發表意見。
你的GPA比上学期上升了。

你的GPA比上学期下降了。
你認為你的論文會取得不錯的成績，結果的確如你所想。

你認為你的論文會取得不錯的成績，但最後只拿到B級。
你正在一场重要的考试中，但你却发现自己不仅试卷上的问题。你正在一场重要的考试中，试卷上的问题是你所熟悉的。
你的组员一致推选你为组长，而你亦尽力完成了组长的责任。

你的组员一致推选你为组长，但你却没有完全尽到组长的责任。
你的同学问了一个关于你熟悉领域的题目，但你答不出来。

你的同学问了一个关于你熟悉领域的题目，而你亦知道答案。

＋

•
你正在面试中，身边朋友都认为你会成功，而最终结果也是满意的。

你正在面试中，虽然身边朋友都认为你会成功，但最后还是失败了。
Appendix E

Version 2 – Trial 1
Version 2 – Trial 2

あなたの友人は約束を守り、あなたに約束を守ることを約束した。

あなたの友人は約束を守り、あなたに約束を守ることを約束した。

あなたの友人は約束を守り、あなたに約束を守ることを約束した。
Version 2 – Trial 3

+  

-  

You are in a group discussion, and your group members are actively expressing their opinions.

You are in a group discussion, but your group members are not actively participating.

.
你正在检视你的组员的工作，发现整体上仍有瑕疵。

你正在检视你的组员的工作，发现整体完成得不错。
你的GPA比上一學年下降了。

你的GPA比上一學年上升了。
你剛完成主科的考試，離開試場時你也認為自己表現不錯。

你剛完成主科的考試，離開試場時才發現答錯了一題問題。
你正在一場重要的考試中，試卷上的問題亦是你所熟悉的。

你正在一場重要的考試中，但卻發現自己不懂試卷上的問題。
你是老師眼中的優異學生，這次考試亦如常拿到最好的成績。

你是老師眼中的優異學生，但這次考試卻拿不到最好的成績。
你的組員一致推舉你為組長，但你沒有完全盡到組長的責任。

你的組員一致推舉你為組長，而你亦盡力完成了組長的責任。
你的同學問了一個關於你熟悉範疇的問題，而你亦知道答案。 你的同學問了一個關於你熟悉範疇的問題，但你卻答不出來。
你正在面试中，虽然身边朋友都认为你会成功，但最后结果没有满意。
Appendix F

Version 3 – Trial 1

在一份小组专题研究中，你的组员负责的部分顺利完成了。

在一份小组专题研究中，你的组员负责的部分出现了瑕疵。
你們正在進行小組討論，而你的組員亦有認真地發表意見。

你們正在進行小組討論，但你的組員沒有專注地投入討論中。
你正在檢視你的組員的工作，發現紙張上仍有瑕疪。

你正在檢視你的組員的工作，發現整體完成得不錯。
你認為你的論文會取得不錯的成績，但最後只拿到B級。

你認為你的論文會取得不錯的成績，結果的事如你所想。
你正在一场重要的考试中，试卷上的问题亦是你所熟悉的。

你正在一场重要的考试中，但发现自己不懂试卷上的问题。
你是老師眼中的優異學生，這次考試亦如常拿到最好的成績。

你是老師眼中的優異學生，但這次考試卻拿不到最好的成績。
你的组员一致推举你为组长，但你没有完全尽到组长的责任。

你的组员一致推举你为组长，而你亦尽力完成了组长的责任。
你正在面试中，虽然身边朋友都认为你会成功，但最后还是失败了。

你正在面试中，身边朋友都认为你会成功，而最后结果也是满意的。

●
Appendix G

Version 4 – Trial 1

[Diagram with text boxes containing Chinese characters: '在一份小组专题研究中，你的组员负责的部分出现了瑕疵。' '在一份小组专题研究中，你的组员负责的部分顺利完成了。']
你的朋友順利在限期前完成與你約定的事。

你的朋友沒有在限期前完成與你約定的事。
你們正在進行小組討論，但你的組員沒有專注地投入討論中。

你們正在進行小組討論，而你的組員亦有認真地發表意見。
你正在檢視你的組員的工作，發現整體完成得不錯。

你正在檢視你的組員的工作，發現整體上仍有瑕疵。
你的GPA比上一学年上升了。
你的GPA比上一学年下降了。
你認為你的論文會取得不錯的成績，結果的確如你所想。

你認為你的論文會取得不錯的成績，但最後只拿到B級。
你剛完成主科的考試，離開試場時才發現答錯了一道問題。

你剛完成主科的考試，離開試場時你也認為自己表現不錯。
你是老師眼中的優異學生，但這次考試卻拿不到最好的成績。

你是老師眼中的優異學生，這次考試亦如常拿到最好的成績。
你的组员一致推选你为组长，而你亦尽力完成了组长的责任。

你的组员一致推选你为组长，但你却没有完全尽到组长的责任。
你的同學問了一個關於你熟悉的問題，但你答不出來。

你的同學問了一個關於你熟悉的問題，而你亦知道答案。
你正在面试中，身边朋友都认为你会成功，而最后结果也是满意的。

你正在面试中，虽然身边朋友都认为你会成功，但最后还是失败了。
Figure 2. Interaction effect between OOP and Types of scenario on RT in Trial 1
Figure 3. Interaction effect between OOP and Types of scenario on RT in Trial 2
Figure 4. Interaction effect between SOP and Types of scenario on RT in Trial 2
Interaction effect between OOP and Types of scenario on RT in Trial 3

Figure 5. Interaction effect between OOP and Types of scenario on RT in Trial 3
Figure 6. Interaction effect between SOP and Types of scenario on RT in Trial 3
Figure 7. Interaction effect between SPP and Types of scenario on RT in Trial 3
Figure 8. Interaction effect between OOP and Types of scenario on RT in Trial 4
Figure 9. Interaction effect between SOP and Types of scenario on RT in Trial 5
Figure 10. Interaction effect between SPP and Types of scenario on RT in Trial 5
Figure 11. Interaction effect between SOP and Types of scenario on RT in Trial 6
Interaction effect between OOP and Types of scenario on RT in Trial 6

Figure 12. Interaction effect between OOP and Types of scenario on RT in Trial 6
Figure 13. Interaction effect between SPP and Types of scenario on RT in Trial 6
Figure 14. Interaction effect between SOP and Types of scenario on RT in Trial 7
Figure 15. Interaction effect between SPP and Types of scenario on RT in Trial 7
Figure 16. Interaction effect between SOP and Types of scenario on RT in Trial 8
Figure 17. Interaction effect between SPP and Type of scenario on RT in Trial 8
Figure 18. Interaction effect between SPP and Types of scenario on RT in Trial 9
Figure 19. Interaction effect between SOP and Types of scenario on RT in Trial 9
Figure 20. Interaction effect between SPP and Types of scenario on RT in Trial 10
Interaction effect between SOP and Types of scenario on RT in Trial 10

Figure 21. Interaction effect between SOP and Types of scenario on RT in Trial 10
Figure 22. Interaction effect between SPP and Types of scenario on RT in Trial 11
Figure 23. Interaction effect between SPP and Types of scenario on RT in Trial 12
Figure 24. Interaction effect between SOP and Types of scenario on RT in Trial 12