Effects of Stereotype under the Influence of Perspective-Taking on Memory for Positive and Negative Events

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Abstract

The aim of the present study was to examine the influence of occupational stereotypes on memory performance under the influence of perspective-taking. The present study found the memory performance for positive events was better than negative events. Although the present study was not successful in finding stereotype main effect on memory, the present study observed significant interaction effect between different scenarios. Stereotype enhanced memory performance in positive events while no stereotype effect was found in negative events. In summary, the present study highlighted the important influence of stereotype and perspective-taking on memory.
Effects of Stereotype under the Influence of Perspective-Taking on Memory

Eyewitness misidentification was reported to be the leading factor in more than 75% of all wrongful convictions ("The Innocent Project," n.d.) An example of such an unfortunate case is Calvin Willis who was convicted in 1982 of rape and sentenced to life imprisonment by the evidence of eyewitnesses’ testimonials. Eyewitnesses, including the victim, her mother, and sister, testified against Willis as the perpetrator. In year 2003, DNA evidence released Willis from prison after he served more than 21 years for a crime he did not commit. Although eyewitness testimony can be substantially persuasive, 30 years of established social science research has shown that eyewitness testimony is often unreliable.

In the literature on memory, it has been well noted that although individuals’ memory for events can be startlingly accurate at times, memory is also often incomplete and can possibly be distorted (Alba & Hasher, 1983). It was previously believed that memories for events are permanent and recalling these events requires simply replaying these episodes as if replaying a video. However, many researchers have argued that this reappearance hypothesis is wrong (Neisser, 1967). Memories do not just resurface when they are recalled. Instead, they are dynamic and malleable (Loftus, 1979). Many researchers have agreed that memories are largely constructive and are products of the reconstruction process (Synder & Uranowitz, 1978).

The memory reconstruction process refers to the process of using pre-existing knowledge, information present at encoding as well as cues at retrieval to reproduce a memory episode (Surprenant & Neath, 2009). The purpose of this inherent nature of memory is suggested to ensure individuals’ memory remain coherent and reasonable (Bartlett, 1932). Consequently, during retrievals, individuals depend on frameworks that they already have in their heads to reproduce a memory episode that does not deviate from their beliefs. Therefore, in the attempt to ensure memory episode remains coherent, it is likely that the reconstruction
process may lead to memory distortion and confabulation (Estes, 1997). One of the earliest studies which illustrated that memory can be distorted as a result of reconstruction was reported by Bartlett (1932). In his study, when English participants were asked to reproduce an unfamiliar North American Native folktale titled “The War of the Ghosts”, they “regularized” the story to match it to their more familiar Western fairytale structures during retrievals. It was reasoned that English participants’ unfamiliarity with the presented story resulted in their inability to recall accurately. The difficulties faced during retrievals led the participants to unconsciously reconstruct the story in a more familiar fashion.

Bartlett (1932) stressed that the reconstructive nature of memory arises when individuals use schemas during encoding. Schema refers to the integrated mental network of knowledge and beliefs about a particular topic or domain, developed from past experience. Schema fuels the reconstruction process by tailoring encountered events so that individuals’ new experience stays coherent and similar to their prior understandings. In doing so, schema allows major themes, secondary themes and other supporting details to be connected in proper relation to organize the encountered events. Once a major theme is formulated, that theme may serve as a cognitive schema that guides what is recalled and what is not (Mather, Shafir, & Johnson, 2000). For example, if the theme is a birthday celebration, individuals are more likely to remember details about birthday songs and cakes rather than whether the waiter at the restaurant was tipped. Therefore, during recollection, individuals are more inaccurately recall about birthday songs or cakes even though such detail may not be present in one of his/her birthday celebration due to incorporation of typical birthday schemas into recollections.

Furthermore, other researchers who extended Bartlett’s findings suggested that the reconstruction process become more prevalent with longer delays (Bergman & Roediger, 1999). The researchers reported that participants introduced more rationalization and
distortion into their recalls as the delay increases. In addition, unfamiliarity with presented situation was also suggested to influence the reconstruction process (Brewer, 1996). When individuals experience difficulties in understanding the situation, they depend more on their schema, which can lead to more errors during recall. On the whole, memory recalled is not unbiased and is subjected to the reconstruction process, which tend to be more prevalent when delay from actual event increases and when event encountered increases in unfamiliarity.

The discussion so far focuses on the influence of schema on the reconstruction during encoding. However, other information present during both encoding and retrieval can also influence the reconstruction process. After participants were asked to watch slides that showed a car accident, Loftus and Palmer (1974) found that the verb used in a question, guided participants to reconstruct their memory such that the memory was consistent with the meaning inferred by the verb. When the verb ‘smashed’ was used, a significant percentage of participants reported that they saw broken glass as compared to when the verb was ‘contacted’, even though no broken glass was present in the actual slides. This experiment demonstrated that information at retrieval is sufficient to influence individuals’ recall. Therefore, this supported the dynamic and malleable nature of memory.

In summary, it is evident that our memory is undeniably constructive. Nonetheless, the reconstruction process is not an all-or-none phenomenon. The reconstruction process becomes more evident as events to be recalled increase in novelty and as delay increases. Therefore, it is of utmost importance to further understand this process and its implications on human memory especially in the area of eyewitness testimony.

Effects of Stereotype on Memory

A very closely associated concept to schema is stereotype as stereotype can be considered as a subset of schema. Thus stereotype may influence the memory reconstruction
process. While schema refers to the general knowledge individuals have about a particular topic, stereotype refers to the general beliefs about a particular group of individuals (Hamilton & Sherman, 1994). Stereotypes are usually linked to certain categories such as occupations, genders, nationalities, and ethnicities. Stereotypes are learned, incorporated as part of individuals’ memory and inadvertently applied in daily lives. Thus, it is very unlikely that recollections are free from the influence of stereotype.

There are many ways in which memory can be influenced by stereotypes. First, stereotypes function as heuristics used to simplify cognitive tasks such as decision making or memory recollection (Bodenhausen & Wyer, 1985). In this manner, stereotypes may influence the memory reconstruction process as they are applied to help in recollections. The use of stereotypes as heuristics is suggested to be more likely when the cognitive tasks increase in complexity. In addition, stereotypes use increase when individuals’ attention is divided as compared to when they have fuller attention (Sherman & Bessenoff, 1999). In other words, if the cognitive task was relatively less complex and individuals were not distracted or overloaded with information, their use of stereotypes may reduce. In relation to eyewitness memory, remembering a crime episode is arguably highly complex as eyewitness has to construe the event based on real world knowledge of the types of persons and situations, current happenings, possible consequences and future behaviors (Bodenhausen & Wyer, 1985). Hence, it is important to note that the excessive cognitive tasks demanded in crime may reduce eyewitnesses’ ability to inhibit stereotype use during recalls, thereby affecting the reliability of their statements.

Secondly, stereotypes may influence memory as they have direct effects on the encoding process (Kunda, 1999). Before proceeding, the present study seeks the importance in defining two concepts, namely stereotype-confirming and stereotype-disconfirming information. Information which validates the stereotype is known as stereotype-confirming
information whereas information which contradicts stereotypes is known as stereotype-disconfirming information. The encoding process was argued to be stronger for stereotype-confirming information as compared to stereotype-disconfirming information (Macrae, Bodenhausen, Milne, & Ford, 1997). With stronger encoding, such information is recalled more easily as it is stored in a simpler and more available manner (Sentsis & Burnstein, 1979). Research which supported the argument reported that participants had more accurate recalls for stereotype-confirming information than stereotype-disconfirming information (Synder & Uranowitz, 1978; Sherman & Bessenoff, 1999).

However, it was later argued that the above findings were not so straightforward. Stangor and McMillan (1992) reported that even though memory for stereotype-confirming information was more superior, participants in stereotype-confirming condition also showed significantly more false alarms. Participants recalled stereotype-confirming information which was not present in the actual event, suggesting that memory recalled might be misguided by existing stereotypes. It could also be possible that stereotypes become incorporated in the reconstruction process, leading to recall of stereotype-confirming information which was not present.

In summary, the influence of stereotypes on memory is undeniable. The present study aims to determine whether memory will be affected if an individual’s stereotype is confirmed or disconfirmed. As previous studies generally focused on stereotypes about genders (Todd, Shih, & Ambady, 2000; Kleider, Goldinger, & Knuycky, 2008) and ethnicities (e.g., Todd, Shih, & Ambady, 2000) the present study extends past findings by adopting occupational stereotypes. In particular, the present study examines if memory is enhanced, impaired or unaffected when participants’ occupational stereotype is confirmed or disconfirmed. The findings will be of great importance because if individuals’ memories are indeed influenced
by their stereotypes, it suggests that previous eyewitness studies which did not consider stereotypes may not be comparable in relation to real-life eyewitness memory.

Till now, it is generally agreed that stereotypes pervade individuals’ thinking and influence their memory. Nevertheless, recent research suggested that stereotypes use depends on the perspective individuals adopt during their encounters with events (Galinsky & Moskowitz, 2000). Therefore, the present study is interested in the perspective-taking as a possible moderating factor in the effect of stereotype on memory.

**Perspective-taking as a moderating factor**

Perspective-taking is defined as the process of imagining the world from another vantage point or in another person’s shoes (Galinsky, Ku, & Wang, 2005). To put the self in the position of the other person, active effort is required to establish an overlap between the mental representations of self and the target. In contrast, in the absence of the effort and motivation to perspective take, the world is usually experienced from individuals’ own viewpoint. Hence, it can be concluded that individuals usually experience the world in a first person perspective unless they are motivated to view the world in a third person viewpoint (Hart & Moore, 1973). Importantly, the first-person/third-person perspective distinction has long been recognized (Nigro & Neisser, 1983). First-person perspective-taking involves individual experiencing events from another individual’s viewpoint whereas third-person perspective-taking involves individual witnessing events as an onlooker.

As mentioned, perspective-taking in the present study was proposed to be a possible moderator in the effect of stereotype on memory. However, past research on perspective-taking which did not look into stereotype suggested that perspective-taking have direct effect on memory. More specifically, perspective-taking influences the types of contents in recollections. Nigro and Neisser (1983) reported that when participants recalled past events from a first-person perspective, they tended to include more affective, physical and
physiological details. On the contrary, when participants recalled past events from third-person perspective, they tended to include more objective and descriptive details. Although it will be interesting to replicate this finding, the present study was more interested in memory accuracy rather than any qualitative difference in the information recalled. Hence, the present study was not designed to examine if there was qualitative difference in recollections between the different the first and third-person perspectives.

As defined, perspective-taking requires individuals to actively put themselves in the position of the other person (Hart & Moore, 1973). Subsequent research suggested that when individuals place themselves in the other person’s position, the self is merged with that of target’s (Davis, Conklin, Smith, & Luce, 1996). ‘Target’ here refers to the other person whom the individual is perspective-taking. Davis and colleagues (1996) suggested that as a consequence of self-target merge, the self and target come to share more common elements, creating a sense of merged identities. As a result of this merged identities, Davis and colleagues (1996) observed that individuals who took the first-person perspective ascribed their own self descriptive traits to target. In other words, individuals who took the first-person perspective see target as more self-like. Nevertheless, it is important to note that the influence of the self on target is not one-way. Individuals may incorporate aspects of target into their own identities (Cialdini, Brown, Lewis, Luce, & Neuberg, 1997). This means that the self becomes more target-like. Ideas about target could be generated from individuals’ stereotype about the target.

Taking both sides of the arguments, there should be a competition between the individuals’ self-concept and target’s stereotype in the mind during first-person perspective-taking. Allport (1954) acknowledged this argument and proposed that when two equally applicable constructs are present, the more recently activated construct will be applied. Thus, when individuals are presented with the target, stereotype about target will first be activated.
Following that, when individuals perspective-take, their self-concept becomes activated. Therefore, as the self and target become overlapped during first-person perspective-taking, individuals’ self-concept is applied instead of stereotype about target due to the recency effect. Hence, it is possible that the more personalized the perspective-taker is to target, the less likely stereotype would be used in the interaction (Brewer, 1996). In contrast, when individuals take the third-person perspective, the self is to remain detached from the target, thus stereotype would still be used.

On the whole, perspective-taking seems to moderate the relationship between stereotype and memory. More specifically, stereotype’s effect on memory is expected to decrease when individuals take the first-person perspective and stereotype’s effect on memory is expected to be more salient when individuals take the third-person perspective. Lastly, the interaction between stereotype and perspective-taking is emphasized in the present study as it has crucial implications on forensic practice. For example, the Cognitive Interview procedure used to interview eyewitnesses requires eyewitnesses to describe crime events from a third-person perspective (Geiselman, 1999). However, based on the argument above, more stereotype use among third-person perspective takers is expected. Thus, it is possible that memory recalled through this third-person interview technique is largely influenced by eyewitnesses’ stereotype. Hence, the present study suggests that eyewitnesses’ stereotype under the influence of perspective-taking should be examined to better understanding real-life eyewitness statement.

*Effects of scenario type on memory*

As the main concern of the present study is on the reliability of eyewitnesses’ memories, the events investigated should be crime related. However, the present study included helping scenarios as a comparison condition to crime as the present study is also interested in examining the effect of positive and negative events on memory. This is because
past findings in the existing literature have been controversial. It is still uncertain if memory is enhanced or impaired by negative events as compared to positive events.

Firstly, some researchers proposed that negative events were recalled with lesser accuracy than positive events (van der Kolk & Fisler, 1995; Porter, Taylor & Brinke, 2008). For instance, Crombag, Wagenaar, and Van Koppen (1996) reported that individuals misremembered viewing non-existent video footage of high-profile public tragedies. Following that, significantly more misremembrances were observed among participants for several other public tragedies, including Princess Diana car crash (Ost, Vrij, Costall, & Bull, 2002) and the attack of World Trade Centre on September 11, 2001 (Pezdek, 2003). Collectively, although such footages did not exist, significant number of individuals still reported remembering seeing these footages.

These results indicated that such negative events might have powerful influence on memory accuracy. However, there are other researchers who opposed this view and argued that the negative events are remembered better. For instance, Porter and Peace (2007) found that details of traumatic experiences were recalled more consistently than positive experiences. Also, lab-based research showed that highly negative images were better recalled than positively charged images (Charles, Mather, & Carstensen, 2003).

Although these findings seemed contradictory, research have proposed that negative events though might be remembered more, are however more susceptible to distortion and misinformation as compared to positive events (Porter & Peace, 2007). In summary, the present study aims to examine into the inconsistent past findings by comparing both positive and negative events directly. Importantly, the present study investigates the influence of scenario type on memory under the influence of stereotype and perspective-taking.
Present Study

Overall, the current study focuses on the influence of three manipulations on memory: Stereotype, perspective-taking and scenario type. As mentioned, the present study suggests that perspective-taking may be a possible moderating factor between stereotype and memory. Furthermore, the mechanism of the interplay between stereotype and perspective-taking could be different depending on the scenario type. The following are the main hypotheses:

1. As stereotype-confirming would facilitate encoding of information (Macrae, Bodenhausen, Milne, & Ford, 1997), the present study expects that memory for stereotype-confirming condition will be more superior than that in stereotype-disconfirming condition. Specifically, the present study hypothesizes that memory score will be higher in a stereotype-confirming condition than stereotype-disconfirming condition.

2. The present study expects a moderating effect of perspective-taking on stereotype in memory such that:
   (a) Stereotype will not influence memory among first-person perspective takers. Hence, there should be no difference in memory score among first-person perspective-takers as they are less likely to use their stereotypes and more likely to use their own self-concept.
   (b) Stereotype will influence memory among third-person perspective takers. Hence, there should be differences in memory score among third-person perspective-takers as stereotype is more prevalent. Specifically, the present study hypothesizes that memory score will be higher in stereotype-confirming condition than stereotype-disconfirming condition.

3. As memory for negative events is generally recalled more, the recollections of such events had higher false alarm rate. Besides, the present study was interested in
memory accuracy instead of quantity of recalls; the present study that memory scores for helping condition will be higher than memory score for crime condition.

Method

Participants

100 undergraduates from Nanyang Technological University participated in the present study as part of the requirement for the Introductory to Psychology course. Four data were not recorded. Three of the data were unrecorded due to a technical error while one data was because a participant was not familiar with one of the occupation used in the present study. The remaining sample consisted of 26 males and 70 females aged from 19 to 26 years old ($M = 21.82$, $SD = 1.81$).

Study Design

The present study utilized a 2 X 2 X 3 mixed design, with perspective-taking (first or third person) and scenario type (helping or crime related) manipulated between participants whereas occupational stereotype (confirming, disconfirming or neutral) manipulated within participants. The dependent variable was memory performance obtained from a nine multiple-choice questions memory test.

Procedure

The researcher obtained approval and permission to conduct the study from the ethics committee of Nanyang Technological University. Participation in the study was voluntary and all participants signed an informed consent form. Participants were informed that the present study was interested in reading ability. Such cover story was used to prevent participants from anticipating the memory tests. The present study’s true interest was the influence of perspective-taking and stereotype on memory for different scenarios. Participants were informed about this in the debriefing form at the end of the study. All responses were kept anonymous and confidential.
Participants were randomly assigned to one of the four conditions \((n = 25)\) namely, first-person perspective, helping scenario; first-person perspective, crime scenario; third-person perspective, helping scenario; and third-person perspective, crime scenario. The experiment consisted of a presentation phase, a filler-task phase, a memory test phase and a manipulation check phase. Participants were each assigned to a computer and the entire study was fully computer-administered.

Participants were first instructed to adopt certain perspective (first or third person perspective) while reading the passages. Next, in the *presentation phase*, depending on which scenario type condition (helping or crime scenario), participants were presented with three passages (either all three helping or all three crime scenarios). Of the three passages, two of the passages contained occupations (either stereotype-confirming or stereotype-disconfirming) associated to the protagonists. The third passage without an occupation served as a control for stereotype. The selections of confirming-stereotype and disconfirming-stereotype occupations were based on the results from a pilot study. Subsequently, in the *filler-task phase*, participants completed a three-minute filler task. The task required participants to identify the letter in blue out of a display of several letters of different colours (Treisman & Gelade, 1980). The purpose of this filler task was to ensure participants did not have time to rehearse the information for better recall later. Then, the *memory test phase* involved participants in a surprise memory test. Lastly, in the *manipulation check phase*, participants were requested to rate the two occupations which they had previously encountered in the passages on a 7-point scales based on 25 traits (similar to the pilot test). This manipulation check aimed to ensure that participants carried similar occupational stereotypes as participants in the pilot result.
Materials

This section further describes the pilot study as well as the three manipulations: stereotype, perspective-taking and scenario type. Also, this section includes more details about the memory test used.

Pilot study. 20 participants were recruited for the pilot study via convenience sampling and all participation was voluntary. Participants rated 12 occupations on 25 traits on a 7-point scale, with ‘1’ indicating ‘least descriptive’ and ‘7’ indicating ‘most descriptive’ (see Appendix A). Among the 25 traits, ten were helping-related traits, ten were crime-related traits and remaining five were neutral traits. Examples of helping related traits were ‘helpful’ and ‘sincere’ while examples of crime related traits were ‘deviant’ and ‘dishonest’. Three occupations with the most extreme mean rating for the helping traits were chosen as the confirming stereotype occupation while the three occupations with the lowest mean rating for helping traits were chosen as the disconfirming stereotype occupation for helping scenarios. The three occupations chosen for helping confirming stereotype were ‘doctor’, ‘police’ and ‘teacher’ while the three occupations chosen for helping disconfirming stereotype were ‘hawker’, ‘actress’ and ‘construction worker’. Similarly, the three occupations with the most extreme mean rating for crime related traits were chosen as the confirming stereotype occupation while the three occupations with the lowest mean rating for crime related traits were chosen as the disconfirming stereotype occupation for crime-related scenarios. The three occupations chosen for crime-related confirming stereotype were ‘lawyer’, ‘athlete’ and ‘actress’ while the three occupation chosen for crime-related disconfirming stereotype were ‘police’, ‘teacher’ and ‘cleaner’.

Manipulation of scenario-type. Scenario type was manipulated between participants. In particular, participants were randomly selected and placed in to either the helping or crime related. In the helping condition, the three passages were ‘helping in a road accident’,
‘rescuing a friend from a scam’, and ‘lost-and-found’. In the crime related condition, the three passages were ‘hit and run’, ‘participating in a scam activity’ and ‘refusing to return someone’s belonging’. Furthermore, to ensure comparability, the present study specifically ensured the number of participants in both scenario type conditions remained equal ($n = 50$). The passages were generated by the researchers and the word count for each passage was kept within 140-150 words. This was to ensure the number of information in each passage remained relatively equal (see Appendices B through E for the passages).

**Manipulation of perspective taking.** Perspective-taking was manipulated between participants. Participants were randomly placed in either the first-person or third-person condition. To ensure comparability, the present study specifically ensured the number of participants in both perspectives conditions remained equal ($n = 50$). Participants received one of two sets of instructions to manipulate their perspectives while reading the passages. In the first-person condition, passages were presented using the ‘I’ pronoun while in the third-person condition; passages were presented using a letter to indicate a name for the protagonist (see Appendices B through E). Participants in the first-person condition were encouraged to take on the role of the main character in the passages while participants in the third-person condition were encouraged to remain as a bystander and reminded to not assume any role in the passages. All participants were told that the strategy suggested might help them in reading and understanding the passages.

**Manipulation of stereotypes.** Stereotypes were manipulated within subjects (confirming, disconfirming or neutral). In passages where stereotypes were confirming or disconfirming, occupations were associated to the protagonist whereas in the neutral stereotype condition, there was no occupation mentioned at all. The selections of confirming-stereotype and disconfirming-stereotype occupations were based on the results from the pilot study.
Memory test. The memory test was administered once after the filler task. It consisted of 27 multiple questions. There were nine questions for each passage. Therefore the maximum score possible was nine and minimum score possible was zero. As the presented scenarios were either from a first-person or third-person viewpoint, the questions were generated from those viewpoints as well. An example of a first-person question for road accident passage was, “What was your first reaction after the accident happened?” and the choices given were, “You were in a state of confusion and fear and did not know what to do”, “You were in a state of panic as you did not want to get involved with bad publicity”, “You were in a state of panic as you did not want to be charged by the law” and “Don’t know”. An example of a third-person question for the road accident passage was, “What was S’s first reaction after the accident happened?” and the choices given were, “S was in a state of confusion and fear, and did not know what to do”, “S was in a state of panic as she did not want to get involved with any bad publicity”, “S was in a state of panic as she did not want to be charged by the law” and “Don’t know”. Note that there was a “Don’t know” response for all questions. The purpose of this choice was to reduce the possibility of forcing participants to answer if they really did not know. With that, the present study was confident that the memory score obtained by summing only the correct responses reflected participants’ memory performance.

Results

Stereotype check

Paired samples t-test revealed that participants in present study only partially confirmed the occupational stereotype obtained from the pilot study. Participants in the present study agreed only on stereotypical-helpful occupations (see Table 1). More specifically, helpful confirming stereotype occupations had significantly higher ratings on ten helping traits compared to helpful disconfirming occupations, t(95) = .28, p < .05. However,
participants in the present study did not agree on stereotypical-crime occupations. Crime confirming stereotype occupations did not have significantly higher ratings on ten crime-related traits compared to crime disconfirming occupations, \( t(95) = 1.21, \text{ns} \).

Table 1

\textit{Means (Standard Deviations) of occupations on helping and crime related traits}

<table>
<thead>
<tr>
<th>Helping traits</th>
<th>Crime traits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirming</td>
<td>Disconfirming</td>
</tr>
<tr>
<td>45.25 (11.69)</td>
<td>42.68 (10.32)</td>
</tr>
<tr>
<td>Confirming</td>
<td>Disconfirming</td>
</tr>
<tr>
<td>35.74 (10.64)</td>
<td>34.22 (9.50)</td>
</tr>
</tbody>
</table>

\textit{Hypothesis 1 and 2}

Repeated measure of analysis of variance (ANOVA) was used to analyze the effect of within-subject factor (stereotype) on memory performance. Results indicated that there was no significant difference between stereotype-confirming, disconfirming or neutral condition, \( F(2,190) = .194, \text{ns} \) (see Table 2).

Repeated measure of ANOVA selecting only first-person condition revealed that there was no significant difference in memory performance among the first-person perspective taker, \( F(2, 48) = .54, \text{ns} \) (see Table). Similar analysis selecting only third-person condition showed that there was also no significant difference in memory performance among the third-person perspective takers, \( F(2,44) = 1.44, \text{ns} \) (see Table 2).
Table 2

Mean (Standard Deviation) of Memory Scores for First-person and Third-person perspective

| Perspective | Confirming | | Disconfirming | | Neutral |
|-------------|-----------|------------------|-----------------|------------------|
|              | First- | Third- | First- | Third- | First- | Third- |
| person      | person |        | person |        | person |        |
|             | 7.30   | 7.35  | 7.54   | 6.87   | 7.36   | 7.28   |
|             | (1.45) | (1.61)| (1.30) | (1.81) | (1.45) | (1.52) |
| Overall     | 7.32 (1.52) |     | 7.22 (1.59) |     | 7.32 (1.48) |     |

Hypothesis 3

Paired-sample $t$-test revealed that memory for helping scenario ($M = 7.65$, $SD = .96$) was significantly better than memory for crime ($M = 6.95$, $SD = 1.06$), $t(94) = 3.38$, $p < .05$.

Interaction Effect

To explore possible interaction effects between the three variables, a 3 X 2 X 2 split-plot analysis of variance was used as there were two between-subject IVs (type of scenario and perspective-taking) and one within-subject IV (stereotype).

Results revealed an interaction effect between scenario type and stereotype on memory score, $F(1,92) = 11.47$, $p < .05$. As interaction effect was present, the simple effects of the variables are explored using paired-sampled $t$-tests. The results showed that when stereotype was confirming, memory score for helping scenario was significantly higher than that for crime, $t(94) = 4.03$, $p < .05$. When stereotype was disconfirming, memory score for the helping scenario were not significantly different from that for crime, $t(94) = -.81$, ns. In the helping condition, memory score for stereotype confirming condition was significantly higher than that for stereotype disconfirming condition, $t(46) = 2.89$, $p < .05$. In contrast, in the crime condition, memory score for stereotype confirming condition was significantly
lower than that for stereotype disconfirming condition, $t(48) = -2.45, p < .05$.

(see Table 3 and Figure 1)

Table 3

*Mean (Standard Deviation) of Memory Score for Helping and Crime Scenario for Confirming, Disconfirming and Neutral conditions*

<table>
<thead>
<tr>
<th>Stereotype</th>
<th>Helping</th>
<th>Crime</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Confirming</td>
<td>Confirming</td>
</tr>
<tr>
<td></td>
<td>7.91 (1.27)</td>
<td>6.76 (1.50)</td>
</tr>
<tr>
<td>Overall</td>
<td>7.65 (.96)</td>
<td>6.95 (1.06)</td>
</tr>
</tbody>
</table>

*Figure 1* Interaction effect between scenario type and stereotype on memory
Hypothesis 1: Memory score for stereotype-confirming condition will be higher than stereotype-disconfirming condition.

It was suggested that stereotype enhances recollection as it functions as cognitive heuristics and facilitates the encoding of stereotype-confirming information. Therefore, the present study expects that memory score will be higher in the stereotype-confirming condition than stereotype-disconfirming condition. However, results from the repeated measure ANOVA revealed that hypothesis 1 was not supported. There was no significant difference in memory scores between the stereotype-confirming and disconfirming condition. In summary, the findings implied that memory was not particularly enhanced or impaired whether or not the stereotype was confirmed or disconfirmed.

Although the present study was not successful in replicating previous studies that memory was enhanced by stereotype-confirming condition (Synder & Uranowitz, 1978), this could possibly due to unsuccessful manipulation of stereotype among participants. Results from the manipulation check supported this proposal. The paired-sampled t-test revealed that participants in the present study only held similar stereotypes about helpful occupations as participants in the pilot study. On the other hand, the participants in the present study did not hold similar stereotypes about crime related occupations as participants in the pilot study. More specifically, participants did not view any differences between stereotype-confirming (lawyer, athlete, and actress) and stereotype-disconfirming occupations (police, teacher, and cleaner) in their crime-relatedness. Therefore, it is possible that since participants did not hold any crime-related occupational stereotypes in the present study, there should not be any influence of stereotype on their memory. This is because, there was no stereotype to aid them to encode and recall stereotype-confirming information. However, as the stereotype
memory manipulation for stereotype-confirming occupations were still present, the present study proceeded with subsequent analysis with stereotype.

Alternatively, the present study suggests that no support found for memory score difference between stereotype-confirming and disconfirming conditions could be due to the strong themed passages used in the study. The activation of occupation stereotypes may be overshadowed by the stories presented in the passages. As the stories were revolved around familiar themes (‘helping in a road accident’, ‘rescuing a friend from a scam’, and ‘lost-and-found’ in the helping condition; ‘hit and run’, ‘scam’, and ‘refusing to return found belonging’ in the crime condition), it is likely that the mental scripts participants have about such events influenced their performance in the memory test. Mental scripts refer to general information as well as specific details about the content of events. For example, a script about “hit-and-run” event allows individuals to expect details such as driving at high speed, knocking pedestrian dressed in dark clothes, and speeding away. Thus, when participants in the present study were presented with passages that were highly familiar, they might be able to guess their answers based on their mental scripts during the memory test. Consequently, due to the familiarity and guessing ability in all participants, there was no difference in memory score between participants in stereotype-confirming and stereotype-disconfirming condition. Therefore, future studies can possibly include passages that did not have familiar themes as comparison or control.

In summary, the present study’s prediction concerning the impact of stereotype on memory was not supported. It could be due to the unsuccessful stereotype manipulation. Thus, if new participants held similar stereotypes as that of pilot study, only then would the present study expects support for hypothesis 1. Also, it was noted that highly familiar situational scripts may possibly override stereotype associated to the protagonist. Therefore,
future studies should examine the applicability situational scripts and person stereotype when both are present.

**Hypothesis 2: The moderating effect of perspective-taking on the influence of stereotype on memory**

During first-person perspective-taking, individuals merge themselves with target so as to create a sense of merged identities (Davis et al., 1996). In contrast to the third-person perspective however, individuals remain independent and detached from target. Consequently, it was argued that due to the difference between the two perspectives, the extent of stereotype applications may vary. More precisely, the present study investigated if perspective-taking moderates the relationship between stereotype and memory. Before discussing if hypothesis 2 is supported, the present study seeks to discuss two sub-hypothesis on the moderating role of perspective-taking.

**Hypothesis 2(a).** As hypothesized, the present study expects no memory score difference between stereotype-confirming and stereotype-disconfirming conditions among the first-person perspective-takers. Results from the repeated measure ANOVA revealed that hypothesis 2(a) was supported. There was indeed no significant difference among the first-person perspective takers in their memory scores despite stereotype congruency.

With the support found hypothesis 2(a), the present study suggests that perspective-taking could be a possible strategy in decreasing the use of stereotype. This idea was also proposed by other researchers that putting oneself in the shoe of target reduces the use of stereotype (Galinsky & Moskowitz, 1999), as a result of self-target merge. However, as mentioned, the influence of self on target is bi-directional. During self-target overlap, individuals are equally likely in incorporating self descriptive traits to target, as well as traits of target to the self (Cialdini et al., 1997). The direction of the self-target influence is argued to determine the extent of stereotype use. If individuals incorporate self descriptive traits to
the merged identity, stereotypes use decreases. However, if individuals incorporate more of
the traits of target (usually derived from stereotypes) into the merged identity, stereotype use
increases. Relating back to the present study, although it was successful in demonstrating that
as individuals took the first-person perspective, there was no stereotype effect on their
memory. This finding allowed the present study to draw conclusion that participants in the
first-person perspective may be less likely in using their stereotypes. However, it is crucial to
note that they were equally likely to have behaved otherwise. In other words, if the
participants had incorporated traits of target into the merged identity, stereotype effect on
memory would be expected. Accordingly, no support for hypothesis 2(a) will be found.

Nonetheless, the present study noted the importance for future studies to examine
possible determining factors on the direction of influence between the self and target. One
possible factor could be cultural differences. Cultural differences encourage different patterns
of perspective-taking (Wu & Keysar, 2007). Interdependent culture (e.g., Chinese) focuses
more on other people, whereas independent culture (e.g., Americans) focuses more on the
self. Accordingly, interdependent culture may foster the tendency of applying the traits of
target into the merged identity whereas independent culture may encourage the tendency of
applying self traits into the merged identity (Markus & Kitayama, 1991). In addition, Markus
and Kitayama (2007) emphasized that the cultural effect discussed here is at the level of use,
not ability. Hence, cultural factor may be one of the determining factors on the direction of
influence between the self and target, but not the only one.

Other factors may include participants’ level of motivation at the time of study. Level
of motivation may refer to participants’ active effort in participating in current study. As the
present study started by telling participants that the interest of the present was on reading
ability, it may have motivated them to concentrate more throughout the study. Hence, it is
plausible that participants in present study may have controlled their sub-conscious application of stereotype, resulting in no stereotype used.

In summary, the present study’s prediction on the influence of stereotype on memory under the influence of first-person perspective-taking was supported. It could be due to the overlap between self and target with the direction towards the self that had offset the stereotype effect. However, it was noted that overlap between self and target with direction towards the target is equally possible, resulting in increased stereotype effect. If this is the case, then no support for hypothesis 2(a) will be expected. In addition to cultural and motivational factors, future studies should examine other possible factors on the direction of self-target influence.

*Hypothesis 2(b).* In contrast, it is argued that the third-person perspective-takers did not overlap themselves with that of target. That is, individuals in the third-person condition remained detached and uninvolved with the target. Therefore, the second part of hypothesis 2 posited that memory score for stereotype-confirming condition will be higher than that of stereotype-disconfirming condition among the third person perspective-takers. However, the repeated measure ANOVA revealed that there was no significant difference in the memory score between the stereotype-confirming and stereotype-disconfirming conditions among the third-person perspective takers. Therefore, the present study did not find any support for hypothesis 2(b). This could possibly be due to weak manipulation of third-person perspective-taking among participants.

Past research highlighted that the emphasis placed on the stimuli (e.g., the story scenarios) may influence the type of memories recalled. More specifically, stories with more descriptive details may lead to more third-person memories. On the contrary, stories with more emotional details tend to generate more first-person memories. Therefore, it was plausible that participants in the third-person perspective condition had switched to first-
person perspective while reading the passages. The passages used in the present study were relatively more emotionally laden and thus, they may have unconsciously directed participants to adopt the first-person perspective. More specifically, the helping condition elicited more positive emotions whereas the crime condition elicited more negative emotions. This is because the helping condition required participants to be either directly involved (first person condition) or witnessed (third-person condition) three consecutive helping episodes. In comparison, the crime condition required participants to be either directly involved (first-person condition) or witnessed (third-person condition) three consecutive crime episodes. Furthermore, other support for this possibility is suggested by Nigro and Neisser (1983). The researchers strongly proposed perspective is not fixed permanently and hence, change is possible. Nonetheless, the proposition that participants in the third-person condition may have switched their perspective while reading requires more studies in the future.

Finally, as hypothesis 2(a) was supported while hypothesis 2(b) remained unsupported, the present study is unable to conclude if hypothesis 2 was supported. However, perspective-taking remains as a possible moderator on the effect of stereotype in memory. Future studies are required to further validate this possibility.

*Hypothesis 3: Memory score for helping condition will be higher than memory score for crime condition.*

As mentioned, although past findings on the effect of scenario type on memory seemed contradictory, it was generally agreed that although more information about negative events may be recalled, the recalls are however more susceptible to distortion as compared to positive events (Porter & Peace, 2007). Consequently, as the memory test in the present study measured the accuracy instead of number of recalls due to the multiple-choice format memory test, hypothesis 3 posited that memory score for the helping condition would be
higher than the score for the crime condition. Results from a paired-sampled $t$-test revealed that hypothesis 3 was indeed supported.

The support found for enhanced memory for positive events could be explained via emotions. The present study aims to stress that the type of scenario is undeniably associated to emotions. As explained, the scenarios used were emotionally laden due to the multiple consecutive exposures to each scenario type (either helping or crime). As a result, the helping condition elicited relatively more positive emotions whereas that the crime condition elicited relatively more negative emotions in participants. To further explain the scenario type effect on memory via emotion, the present study borrows the argument proposed by the *broaden-and-build* theory (Fredrickson, & Branigan, 2005). According to this theory, negative emotions (e.g., fear) usually involve individuals to focus their attention on the threatening elements (e.g., that perpetrator or weapon), thus resulting in encoding of such information. In contrast, a positive event which does not elicit a specific target of emotion allows individuals to attend to greater details about the event and its surrounding. Therefore, it is possible that the negative emotion elicited by crime scenario in the present study may have caused participants to focus only on details about the perpetrator (e.g., the scammer), thereby affecting their subsequent performance in the memory test. On the other hand, the positive emotion elicited by helping scenario may have allowed participants to encode more details on the whole event, thus enabling them to answer the multiple-choice memory test correctly.

In summary, the support found for hypothesis 3 highlighted the scenario type effect on memory. Importantly, the present study suggests that different emotions may have directed the individual to focus on different information during the events, leading individuals to perform differently in memory test. As the present study’s memory test was in the form of multiple-choice question, the score obtained only captured the overall memory performance. It was unable to tell if information remembered was different due to the
different focus on information during the events. Hence, future studies could include open-ended memory questions to allow researchers to analyze if the types of information recalled are different in nature. For instance, it can be expected that more specific information about the perpetrator and weapons will be recalled in a negative event whereas more general information about the entire event will be recalled in a positive event.

**Interaction Effect between Stereotype and Scenario Type on Memory**

The present study explored the possible interaction effects between the three variables and results revealed a significant interaction effect between scenario type and stereotype. As interaction effect is present, the present study noted that the main effect of stereotype (hypothesis 1) and main effect of scenario type (hypothesis 3) may no longer be representative.

Further analysis in simple effect of stereotype in each scenario type showed interesting findings and explanation to the unsupported hypothesis 1. In helping condition, memory score for stereotype-confirming condition was significantly higher than that for stereotype-disconfirming condition. In contrast, in crime condition, memory score for stereotype-confirming condition was significantly lower than that for stereotype-disconfirming condition. It is possible that the contradictory results may have offset each other’s effects, thus resulting in no significance in hypothesis 1. In other words, hypothesis 1 was supported in the helping condition but not in the crime condition. Park (1999) suggested that happy individuals are more likely to make stereotypical judgements, as compared to unhappy individuals. Therefore, participants in the helping condition, who felt generally happier as compared to participants in the crime condition, may depend on their stereotypes more. In contrary, it was found that in the crime condition, not only participants did not depend on their stereotype, they showed entirely opposite results. It is possible that during crime, stereotype effect may be absent and participants increased their awareness for
unexpected information (stereotype disconfirming information), resulting in higher memory for such unexpected information.

Further analysis in simple effect of scenario type in each stereotype (confirming or disconfirming) condition showed interesting findings to the supported hypothesis 3. In stereotype confirming condition, memory score for helping condition was significantly higher than that for crime. In contrast, in the stereotype-disconfirming condition, memory score for helping and crime condition did not differ significantly. In other words, hypothesis 3 was only supported in the stereotype-confirming condition but not in the stereotype-disconfirming condition. The findings indicated that when stereotypes were applicable (confirming), participants relied on them more in positive events than negative events. It is possible that during negative events, participants’ increased negative emotions may have narrowed their attention on information during events. This explanation is similar to the broaden-and-build theory (Fredrickson & Branigan, 2005), discussed above. Also, as mentioned, happy participants were more likely to use their stereotypes (Park, 1999). Therefore, when stereotypes are available (confirmed), it is arguable that individuals relied on them to help them in the memory test. On the other hand, when individuals’ stereotypes are unavailable (disconfirmed), it is possible that there was no stereotype to be depended on, thus leading to no difference between participants in helping and crime condition.

In summary, the interaction effect between stereotype and scenario type found in the present study was astonishing. Firstly, it allowed the present study to further understand the unsuccessful support for hypothesis 1. This implicates that past research which solely studied on stereotype effect on memory, without considering scenario type was not representative. Secondly, the interaction effect enabled the present study to realize that hypothesis 3 was not so straightforward. It was only true when stereotype was confirmed. This finding implies that reliance on stereotype could be reduced if stereotypes are disconfirmed. Jointly, the findings
showed that stereotype indeed had powerful influence on eyewitness testimony. In particular, it is possible that in order to reduce the effect of stereotype on memory, law enforcers can consider disconfirming eyewitnesses’ stereotype before interviewing them. However, more research is needed to ensure the generalizability of current findings.

Limitation

A possible limitation to be considered in the present study concerns the generalizability of the findings. Reading passages on helping behaviour and crime is different from participating and witnessing real-life events. This is because reading passages involve individuals to be relatively passive whereas being a part of real-life events usually involves more active roles. One possible strategy to address this issue would be to investigate if level of involvement in presented events has any influence on memory. This could be possible by allowing participants making active choices of their actions throughout their encounters with the events.

Moreover, another possible drawback of the present study includes the failure to distinguish the qualitative difference in participants’ recollection. More specifically, it was proposed that emotional stress associated to crime events may enhance recollection of central details, however, at the expense of peripheral details (Easterbrook, 1959; Christiansen, 1992). Therefore, future studies can further examine the effect of scenario type on types of details being recalled.

Conclusion

It is clearly shown that memory may not always be perfect. Although not all the hypotheses in the present study were found supported, the present study was able to demonstrate certain extent of effect on memory by stereotype, perspective-taking and scenario type. It was difficult to conclude if perspective-taking was a significant moderator in the influence of stereotype on memory as the hypothesis was not entirely supported.
Importantly, there was a significant interaction effect between stereotype and scenario type on memory. In conclusion, the present study acknowledges and is wary that individuals are bound to use stereotypes in daily lives thus, increasing the likelihood of using such mental shortcuts during recollections. Relating back to criminology and justice practice, police officers as well as jurors should give consideration to these profound factors in influencing the reliability of eyewitness testimony.
References


Appendix A

Pilot Occupation Questionnaire

Please circle and rate the following descriptions on the scale of 1 to 7, in which ‘1’ indicates ‘least descriptive’ while ‘7’ indicates ‘most descriptive’, for each of the occupation.

Doctor

1. Vain

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<th>1 Least descriptive</th>
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2. Helpful

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3. Materialistic

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4. Calm

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5. Truthful

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6. Dishonest

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7. Caring

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8. Alert

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9. Law-abiding

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10. Wealthy

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11. Manipulative

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12. Mean

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13. Intelligent

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14. Well-dressed

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<td>15. Friendly</td>
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This questionnaire will be repeated for other occupations (Teacher, Athlete, Police Officer, Doctor, Actor, Hawker, Maid, Construction worker, Lawyer and Flight attendant).
Appendix B

Passages for First-person Helping Scenario – Condition 1

Passage 1 (Stereotype-confirming occupation)

I am a doctor in one of the government hospitals in Singapore. I specialize in paediatrics and enjoy both the fun and challenges of working with babies and young children. My job scope includes providing consultations, prescribing suitable medicine and performing minor surgeries when necessary. One morning, on my way to work, I saw a road accident. A Honda car knocked a cyclist without stopping. The bicycle flipped over and the cyclist was flung off his bicycle. The cyclist was badly injured and his silver bicycle was also severely damaged. I ran quickly to the injured cyclist, positioned him at the side of the road and bandaged his cuts with my scarf to reduce the bleeding. I then asked a passerby to call an ambulance. The ambulance came fifteen minutes later and sent the cyclist to a nearby hospital.

Passage 2 (Stereotype-disconfirming occupation)

I am a hawker in a hawker centre. I sell chicken rice and herbal soups. I work at my stall from 11am till 9pm daily. One day, a female friend wanted to borrow $2000. I agreed to lend the money and gave her a cheque directly, as I have known her for years. However, despite her promise, she avoided me and failed to return the money after 3 months. Upon asking around, I realized she has been borrowing money from other friends too. I was concerned and suspicious, and decided to approach her at her workplace. After talking to her several times, she finally revealed that she needed the money for her fortune-teller to help herself overcome an imminent crisis. I advised her that many of such scams had been reported in the news recently and brought her to the police centre to lodge a report.
Passage 3 (Stereotype-absent occupation)

I live in the Northeast side of Singapore. Singapore is a densely populated and fast-paced city, with an efficient and developed transportation system. The entire city is extremely well connected and taking the public transport such as, the Mass Rapid Transit (MRT) and public buses, is very convenient. One morning, on my way to work on the bus, I noticed a green pouch on the seat beside me. Upon opening it, there was a red Sony Ericsson handphone inside. There was no identification or contact information available. I guessed it probably belonged to the teenager, who had just alighted. I decided to return the handphone to the lost and found depart at the bus interchange. Although I knew I would be late for work, I bypassed my stop and alighted at the bus interchange to return the handphone. I then hurried to my workplace but was 15 minutes late.
Appendix B (continued)

Passages for First-person Helping Scenario – Condition 2

Passage 1 (Stereotype-disconfirming occupation)

I am a world-renowned actress under the management of an international film company. I had acted in various award-winning films, which was screened in many countries. Being a celebrity earns me fame and money, but also comes with the price of sacrificing my privacy. One morning, on my way to work, I saw a road accident. A Honda car knocked a cyclist without stopping. The bicycle flipped over and the cyclist was flung off his bicycle. The cyclist was badly injured and his silver bicycle was also severely damaged. I ran quickly to the injured cyclist, positioned him at the side of the road and bandaged his cuts with my scarf to reduce the bleeding. I then asked a passerby to call an ambulance. The ambulance came fifteen minutes later and sent the cyclist to a nearby hospital.

Passage 2 (Stereotype-absent occupation)

I live in the Northeast side of Singapore. Singapore is a densely populated and fast-paced city, with an efficient and developed transportation system. The entire city is extremely well connected and taking the public transport such as, the Mass Rapid Transit (MRT) and public buses, is very convenient. One day, a female friend wanted to borrow $2000. I agreed to lend the money and gave her a cheque directly, as I have known her for years. However, despite her promise, she avoided me and failed to return the money after 3 months. Upon asking around, I realized she has been borrowing money from other friends too. I was concerned and suspicious, and decided to approach her at her workplace.
Appendix B (continued)

Passages for First-person Helping Scenario – Condition 2

After talking to her several times, she finally revealed that she needed the money for her fortune-teller to help herself overcome an imminent crisis. I advised her that many of such scams had been reported in the news recently and brought her to the police centre to lodge a report.

Passage 3 (Stereotype-confirming occupation)

I am a police officer, posted in a neighborhood police post. My job involves patrolling the neighborhood and ensuring peace and safety within the community. My working hours are shift-based, and I may have to work through the night sometimes. One morning, on my way to work on the bus, I noticed a green pouch on the seat beside me. Upon opening it, there was a red Sony Ericsson handphone inside. There was no identification or contact information available. I guessed it probably belonged to the teenager, who had just alighted. I decided to return the handphone to the lost and found depart at the bus interchange. Although I knew I would be late for work, I bypassed my stop and alighted at the bus interchange to return the handphone. I then hurried to my workplace but was 15 minutes late.
Appendix B (continued)

Passages for First-person Helping Scenario – Condition 3

*Passage 1 (Stereotype-absent occupation)*

I live in the Northeast side of Singapore. Singapore is a densely populated and fast-paced city, with an efficient and developed transportation system. The entire city is extremely well connected and taking the public transport such as, the Mass Rapid Transit (MRT) and public buses, is very convenient. One morning, on my way to work, I saw a road accident. A Honda car knocked a cyclist without stopping. The bicycle flipped over and the cyclist was flung off his bicycle. The cyclist was badly injured and his silver bicycle was also severely damaged. I ran quickly to the injured cyclist, positioned him at the side of the road and bandaged his cuts with my scarf to reduce the bleeding. I then asked a passerby to call an ambulance. The ambulance came fifteen minutes later and sent the cyclist to a nearby hospital.

*Passage 2 (Stereotype-confirming occupation)*

I am a teacher in a junior college. I teach English and Economics. Besides teaching, I am also actively involved in the school’s tennis team. One day, a female friend wanted to borrow $2000. I agreed to lend the money and gave her a cheque directly, as I have known her for years. However, despite her promise, she avoided me and failed to return the money after 3 months. Upon asking around, I realized she has been borrowing money from other friends too. I was concerned and suspicious, and decided to approach her at her workplace. After talking to her several times, she finally revealed that she needed the money for her fortune-teller to help herself overcome an imminent crisis. I advised her that many of such scams had been reported in the news recently and brought her to the police centre to lodge a report.
Appendix B (continued)

Passages for First-person Helping Scenario – Condition 3

Passage 3 (Stereotype-disconfirming occupation)

I work as a construction worker on a site for a new industrial park in Jurong. I live in a worker hostel half an hour away from my workplace. My job involves driving and operating engineering vehicles involved in the construction process. One morning, on my way to work on the bus, I noticed a green pouch on the seat beside me. Upon opening it, there was a red Sony Ericsson handphone inside. There was no identification or contact information available. I guessed it probably belonged to the teenager, who had just alighted. I decided to return the handphone to the lost and found depart at the bus interchange. Although I knew I would be late for work, I bypassed my stop and alighted at the bus interchange to return the handphone. I then hurried to my workplace but was 15 minutes late.
Appendix C

Passages for First-person Crime Scenario – Condition 1

Passage 1 (Stereotype-disconfirming occupation)

I am a police officer, posted in a neighborhood police post. My job involves patrolling the neighborhood and ensuring peace and safety within the community. My working hours are shift-based, and I may have to work through the night sometimes. One day, after working till early morning, I drove back to my apartment. As I was driving along an empty road in Jurong East, a man dashed out of the road suddenly. There was insufficient time to avoid him. Upon rushing out of my car, I saw a young man decked in all-black attire, lying conscious on the ground. I was panicking as I did not want to get into any trouble with the law. As the man was still breathing and appeared to be regaining his consciousness, I decided to flee the scene. After scanning the surroundings, I sped away in my car.

Passage 2 (Stereotype-confirming occupation)

I am a lawyer in a local law firm. I had been practicing law for a few years. I specialize in divorce cases and may have to attend court sessions at times. One day, I was in need of money urgently, as I needed to repay a loan to the loan sharks. After confiding in my friend, he recommended me to a part-time job. I was told to investigate the family backgrounds of certain individuals. My job was to inform certain families that their child residing overseas is currently injured and in need of money for an operation. I was to provide an Australian back account number for the call recipients to transfer their money to. Although I was reluctant to be involved in such a job, the pay was twice my monthly salary and I needed the money. I was able to repay half of the money I owed.
Appendix C (continued)

Passages for First-person Crime Scenario – Condition 1

Passage 3 (Stereotype-absent occupation)

I live in the Northeast side of Singapore. Singapore is a densely populated and fast-paced city, with an efficient and developed transportation system. The entire city is extremely well connected and taking the public transport such as, the Mass Rapid Transit (MRT) and public buses, is very convenient. One afternoon, as I was walking in the vicinity, I saw a wallet on the ground. It was beige in colour, with red and blue horizontal stripes. I picked up the wallet when no one was paying attention and walked away hurriedly. Upon reaching a secluded corner, I searched the contents in it and disposed the identification card and such documents. After keeping the wallet in my locker, I then went back to work casually. Soon after, an anxious-looking girl approached me and asked if I saw a wallet lying around. I replied negatively and advised her to look for it elsewhere.
Appendix C (continued)

Passages for First-person Crime Scenario – Condition 2

Passage 1 (Stereotype-absent occupation)

I live in the Northeast side of Singapore. Singapore is a densely populated and fast-paced city, with an efficient and developed transportation system. The entire city is extremely well connected and taking the public transport such as, the Mass Rapid Transit (MRT) and public buses, is very convenient. One day, after working till early morning, I drove back to my apartment. As I was driving along an empty road in Jurong East, a man dashed out of the road suddenly. There was insufficient time to avoid him. Upon rushing out of my car, I saw a young man decked in all-black attire, lying conscious on the ground. I was panicking as I did not want to get into any trouble with the law. As the man was still breathing and appeared to be regaining his consciousness, I decided to flee the scene. After scanning the surroundings, I sped away in my car.

Passage 2 (Stereotype-disconfirming occupation)

I am a teacher in a junior college. I teach English and Economics. Besides teaching, I am also actively involved in the school’s tennis team. One day, I was in need of money urgently, as I needed to repay a loan to the loan sharks. After confiding in my friend, he recommended me to a part-time job. I was told to investigate the family backgrounds of certain individuals. My job was to inform certain families that their child residing overseas is currently injured and in need of money for an operation. I was to provide an Australian back account number for the call recipients to transfer their money to. Although I was reluctant to be involved in such a job, the pay was twice my monthly salary and I needed the money. I was able to repay half of the money I owed.
Passage 3 (Stereotype-confirming occupation)

I am a swimmer in the national team in Singapore. In the past two years, I have represented my country in various international competitions. My training regime includes swimming or jogging and working out in the gym daily. One afternoon, as I was walking in the vicinity, I saw a wallet on the ground. It was beige in colour, with red and blue horizontal stripes. I picked up the wallet when no one was paying attention and walked away hurriedly. Upon reaching a secluded corner, I searched the contents in it and disposed the identification card and such documents. After keeping the wallet in my locker, I then went back to training casually. Soon after, an anxious-looking girl approached me and asked if I saw a wallet lying around. I replied negatively and advised her to look for it elsewhere.
Passage 1 (Stereotype-confirming occupation)

I am a world-renowned actress under the management of an international film company. I had acted in various award-winning films, which was screened in many countries. Being a celebrity earns me fame and money, but also comes with the price of sacrificing my privacy. One day, after working till early morning, I drove back to my apartment. As I was driving along an empty road in Jurong East, a man dashed out of the road suddenly. There was insufficient time to avoid him. Upon rushing out of my car, I saw a young man decked in all-black attire, lying conscious on the ground. I was panicking as I did not want to get into any trouble with the law. As the man was still breathing and appeared to be regaining his consciousness, I decided to flee the scene. After scanning the surroundings, I sped away in my car.

Passage 2 (Stereotype-absent occupation)

I live in the Northeast side of Singapore. Singapore is a densely populated and fast-paced city, with an efficient and developed transportation system. The entire city is extremely well connected and taking the public transport such as, the Mass Rapid Transit (MRT) and public buses, is very convenient. One day, I was in need of money urgently, as I needed to repay a loan to the loan sharks. After confiding in my friend, he recommended me to a part-time job. I was told to investigate the family backgrounds of certain individuals. My job was to inform certain families that their child residing overseas is currently injured and in need of money for an operation. I was to provide an Australian back account number for the call recipients to transfer their money to. Although I was reluctant to be involved in such a job, the pay was twice my monthly salary and I needed the money. I was able to repay half of the money I owed.
Appendix C (continued)

Passages for First-person Crime Scenario – Condition 3

Passage 3 (Stereotype-disconfirming occupation)

I work as a cleaner in a shopping centre. My workplace is a fifteen minutes bus ride from my home. My job involves maintaining the cleanliness in the shopping centre, cleaning the toilets and clearing the rubbish bins. One afternoon, as I was walking in the vicinity, I saw a wallet on the ground. It was beige in colour, with red and blue horizontal stripes. I picked up the wallet when no one was paying attention and walked away hurriedly. Upon reaching a secluded corner, I searched the contents in it and disposed the identification card and such documents. After keeping the wallet in my locker, I then went back to work casually. Soon after, an anxious-looking girl approached me and asked if I saw a wallet lying around. I replied negatively and advised her to look for it elsewhere.
Appendix D

Passages for Third-person Helping Scenario – Condition 1

Passage 1 (Stereotype-confirming occupation)

T is a doctor in one of the government hospitals in Singapore. She specializes in paediatrics and enjoys both the fun and challenges of working with babies and young children. Her job scope includes providing consultations, prescribing suitable medicine and performing minor surgeries when necessary. One morning, on her way to work, she saw a road accident. A Honda car knocked a cyclist and sped off without stopping. The bicycle flipped over and the cyclist was flung off his bicycle. The cyclist was badly injured and his silver bicycle was also severely damaged. T ran quickly to the injured cyclist, positioned him at the side of the road and bandaged his cuts with her scarf to reduce the bleeding. She then asked a passerby to call an ambulance. The ambulance came fifteen minutes later and sent the cyclist to a nearby hospital.

Passage 2 (Stereotype-disconfirming occupation)

M is a hawker in a hawker-centre. He sells chicken rice and herbal soups. He works at the stall from 11am till 9pm daily. One day, a female friend wanted to borrow $2000. He agreed to lend the money and gave her a cheque directly, as he has known her for years. However, despite her promise, she avoided him and failed to return the money after 3 months. Upon asking around, he realized she has been borrowing money from other friends too. M was concerned and suspicious, and decided to approach her at her workplace. After talking to her several times, she finally revealed that she needed the money for her fortune-teller to help her overcome an imminent crisis. M advised her that many of such scams had been reported in the news recently and brought her to the police centre to lodge a report.
Appendix D (continued)

Passages for Third-person Helping Scenario – Condition 1

Passage 3 (Stereotype-absent occupation)

H lives in the Northeast side of Singapore. Singapore is a densely populated and fast-paced city, with an efficient and developed transportation system. The entire city is extremely well connected and taking the public transport such as, the Mass Rapid Transit (MRT) and public buses, is very convenient. One morning, on H’s way to work on the bus, he noticed a green pouch on the seat beside him. Upon opening it, there was a red Sony Ericsson handphone inside. There was no identification or contact information available. H guessed it probably belonged to the teenager, who had just alighted. He decided to return the handphone to the lost and found department at the bus interchange. Although he knew he would be late for work, he bypassed his stop and alighted at the bus interchange to return the handphone. He then hurried to his workplace but was 15 minutes late.
Passages for Third-person Helping Scenario – Condition 2

**Passage 1 (Stereotype-disconfirming occupation)**

S is a world-renowned *actress* under the management of an international film company. She had acted in various award-winning films, which was screened in many countries. Being a celebrity earns her fame and money, but also comes with the price of sacrificing her privacy. One morning, on her way to work, she saw a road accident. A Honda car knocked a cyclist and sped off without stopping. The bicycle flipped over and the cyclist was flung off his bicycle. The cyclist was badly injured and his silver bicycle was also severely damaged. T ran quickly to the injured cyclist, positioned him at the side of the road and bandaged his cuts with her scarf to reduce the bleeding. She then asked a passerby to call an ambulance. The ambulance came fifteen minutes later and sent the cyclist to a nearby hospital.

**Passage 2 (Stereotype-absent occupation)**

M lives in the Northeast side of Singapore. Singapore is a densely populated and fast-paced city, with an efficient and developed transportation system. The entire city is extremely well connected and taking the public transport such as, the Mass Rapid Transit (MRT) and public buses, is very convenient. One day, a female friend wanted to borrow $2000. M agreed to lend the money and gave her a cheque directly, as he has known her for years. However, despite her promise, she avoided him and failed to return the money after 3 months. Upon asking around, he realized she has been borrowing money from other friends too. M was concerned and suspicious, and decided to approach her at her workplace.
Appendix D (continued)

Passages for Third-person Helping Scenario – Condition 2

After talking to her several times, she finally revealed that she needed the money for her fortune-teller to help her overcome an imminent crisis. M advised her that many of such scams had been reported in the news recently and brought her to the police centre to lodge a report.

Passage 3 (Stereotype-confirming occupation)

H is a police officer, posted in a neighborhood police post. His job involves patrolling the neighborhood and ensuring peace and safety within the community. His working hours are shift-based, and he may have to work through the night sometimes. One morning, on H’s way to work on the bus, he noticed a green pouch on the seat beside him. Upon opening it, there was a red Sony Ericsson handphone inside. There was no identification or contact information available. H guessed it probably belonged to the teenager, who had just alighted. He decided to return the handphone to the lost and found department at the bus interchange. Although he knew he would be late for work, he bypassed his stop and alighted at the bus interchange to return the handphone. He then hurried to his workplace but was 15 minutes late.
Appendix D (continued)

Passages for Third-person Helping Scenario – Condition 3

**Passage 1 (Stereotype-absent occupation)**

D lives in Northeast side of Singapore. Singapore is a densely populated and fast-paced city, with an efficient and developed transportation system. The entire city is extremely well connected and taking the public transport such as, the Mass Rapid Transit (MRT) and public buses, is very convenient. One morning, on her way to work, she saw a road accident. A Honda car knocked a cyclist and sped off without stopping. The bicycle flipped over and the cyclist was flung off his bicycle. The cyclist was badly injured and his silver bicycle was also severely damaged. D ran quickly to the injured cyclist, positioned him at the side of the road and bandaged his cuts with her scarf to reduce the bleeding. She then asked a passerby to call an ambulance. The ambulance came fifteen minutes later and sent the cyclist to a nearby hospital.

**Passage 2 (Stereotype-confirming occupation)**

J is a teacher in a junior college. He teaches English and Economics. Besides teaching, he is also actively involved in the school’s tennis team. One day, a female friend wanted to borrow $2000. He agreed to lend the money and gave her a cheque directly, as he has known her for years. However, despite her promise, she avoided him and failed to return the money after 3 months. Upon asking around, he realized she has been borrowing money from other friends too. J was concerned and suspicious, and decided to approach her at her workplace. After talking to her several times, she finally revealed that she needed the money for her fortune-teller to help her overcome an imminent crisis. J advised her that many of such scams had been reported in the news recently and brought her to the police centre to lodge a report.
Appendix D (continued)

Passages for Third-person Helping Scenario – Condition 3

Passage 3 (Stereotype-disconfirming occupation)

Z works as a construction worker on a site for a new industrial park in Jurong. He lives in a worker hostel half an hour away his workplace. His job involves driving and operating engineering vehicles involved in the construction process. One morning, on Z’s way to work on the bus, he noticed a green pouch on the seat beside him. Upon opening it, there was a red Sony Ericsson handphone inside. There was no identification or contact information available. Z guessed it probably belonged to the teenager, who had just alighted. He decided to return the handphone to the lost and found department at the bus interchange. Although he knew he would be late for work, he bypassed his stop and alighted at the bus interchange to return the handphone. He then hurried to his workplace but was 15 minutes late.
Appendix E

Passages for Third-person Crime Scenario – Condition 1

Passage 1 (Stereotype-disconfirming occupation)

C is a police officer, posted in a neighborhood police post. His job involves patrolling the neighborhood and ensuring safety within the community. His working hours are shift-based, and he may have to work through the night sometimes. One day, after working till the early morning, C drove back to his apartment. As he was driving along an empty road in Jurong East, a man dashed out onto the road suddenly. There was insufficient time to avoid him. Upon rushing out of his car, C saw a young man decked in all-black attire, lying unconscious on the ground. C was panicking as he did not want to get into any trouble with the law. As the man was still breathing and appeared to be regaining consciousness, he decided to flee the scene. After scanning the surroundings, he sped away in his car.

Passage 2 (Stereotype-confirming occupation)

W is a lawyer in a local law firm. He had been practicing law for a few years. W specializes in divorce cases and may have to attend court sessions at times. One day, W was in need of money urgently, as he needed to repay a loan to the loan sharks. After confiding in his friend, he was recommended to a part-time job. W was told to investigate the family backgrounds of certain individuals. His job was to inform certain families that their child residing overseas is currently injured and in need of money for an operation. He was to provide an Australian bank account number for the call recipients to transfer their money to. Although W was reluctant to be involved in such a job, the pay was twice his monthly salary and he needed the money. He was able to repay half of the money he owed.
Passage 3 (Stereotype-absent occupation)

J lives in the Northeast side of Singapore. Singapore is a densely populated and fast-paced city, with an efficient and developed transportation system. The entire city is extremely well connected and taking the public transport such as, the Mass Rapid Transit (MRT) and public buses, is very convenient. One afternoon, as J was walking in the vicinity, she saw a wallet on the ground. It was beige in colour, with red and blue horizontal stripes. J picked up the wallet when no one was paying attention and walked away hurriedly. Upon reaching a secluded corner, she searched the contents in it and disposed the identification card and such documents. After keeping the wallet in her locker, she then went back to work casually. Soon after, an anxious-looking girl approached her and asked if she saw a wallet lying around. J replied negatively and advised her to look for it elsewhere.
Appendix E (continued)

Passages for Third-person Crime Scenario – Condition 2

Passage 1 (Stereotype-absent occupation)

T lives in the Northeast side of Singapore. Singapore is a densely populated and fast-paced city, with an efficient and developed transportation system. The entire city is extremely well connected and taking the public transport such as, the Mass Rapid Transit (MRT) and public buses, is very convenient. One day, after working till the early morning, T drove back to his apartment. As he was driving along an empty road in Jurong East, a man dashed out onto the road suddenly. There was insufficient time to avoid him. Upon rushing out of his car, T saw a young man decked in all-black attire, lying unconscious on the ground. T was panicking as he did not want to get into any trouble with the law. As the man was still breathing and appeared to be regaining consciousness, he decided to flee the scene. After scanning the surroundings, he sped away in his car.

Passage 2 (Stereotype-disconfirming occupation)

J is a teacher in a junior college. He teaches English and Economics. Besides teaching, he is also actively involved in the school’s tennis team. One day, J was in need of money urgently, as he needed to repay a loan to the loan sharks. After confiding in his friend, he was recommended to a part-time job. J was told to investigate the family backgrounds of certain individuals. His job was to inform certain families that their child residing overseas is currently injured and in need of money for an operation. He was to provide an Australian bank account number for the call recipients to transfer their money to. Although J was reluctant to be involved in such a job, the pay was twice his monthly salary and he needed the money. He was able to repay half of the money he owed.
Passage 3 (Stereotype-confirming occupation)

D is a swimmer in the national team in Singapore. In the past two years, she has represented her country in various international competitions. Her training regime includes swimming or jogging and working out in the gym daily. One afternoon, as D was walking in the vicinity, she saw a wallet on the ground. It was beige in colour, with red and blue horizontal stripes. D picked up the wallet when no one was paying attention and walked away hurriedly. Upon reaching a secluded corner, she searched the contents in it and disposed the identification card and such documents. After keeping the wallet in her locker, she then went back to training casually. Soon after, an anxious-looking girl approached her and asked if she saw a wallet lying around. D replied negatively and advised her to look for it elsewhere.
Appendix E (continued)

Passages for Third-person Crime Scenario – Condition 3

Passage 1 *(Stereotype-confirming occupation)*

S is a world-renowned *actress* under the management of an international film company. She has acted in various award-winning films, which was screened in many countries. Being a celebrity earns her fame and money, but also comes with the price of sacrificing her privacy. One day, after working till the early morning, S drove back to her apartment. As she was driving along an empty road in Jurong East, a man dashed out onto the road suddenly. There was insufficient time to avoid him. Upon rushing out of her car, S saw a young man decked in all-black attire, lying unconscious on the ground. S was panicking as she did not want to get into any trouble with the law. As the man was still breathing and appeared to be regaining consciousness, she decided to flee the scene. After scanning the surroundings, she sped away in her car.

Passage 2 *(Stereotype-absent occupation)*

W lives in the Northeast side of Singapore. Singapore is a densely populated and fast-paced city, with an efficient and developed transportation system. The entire city is extremely well connected and taking the public transport such as, the Mass Rapid Transit (MRT) and public buses, is very convenient. One day, W was in need of money urgently, as he needed to repay a loan to the loan sharks. After confiding in his friend, he was recommended to a part-time job. W was told to investigate the family backgrounds of certain individuals. His job was to inform certain families that their child residing overseas is currently injured and in need of money for an operation. He was to provide an Australian bank account number for the call recipients to transfer their money to.
Appendix E (continued)

Passages for Third-person Crime Scenario – Condition 3

Although W was reluctant to be involved in such a job, the pay was twice his monthly salary and he needed the money. He was able to repay half of the money he owed.

Passage 3 (Stereotype-disconfirming occupation)

P works as a cleaner in a shopping centre. Her workplace is a fifteen minutes bus ride from her home. Her job involves maintaining the cleanliness in the shopping centre, cleaning the toilets and clearing the rubbish bins. One afternoon, as P was walking in the vicinity, she saw a wallet on the ground. It was beige in colour, with red and blue horizontal stripes. P picked up the wallet when no one was paying attention and walked away hurriedly. Upon reaching a secluded corner, she searched the contents in it and disposed the identification card and such documents. After keeping the wallet in her locker, she then went back to work casually. Soon after, an anxious-looking girl approached her and asked if she saw a wallet lying around. P replied negatively and advised her to look for it elsewhere.