The effect of sharpness of a knife on a weapon focus

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The present study was designed to investigate the relationship between a weapon focus and a physical feature of a weapon, that is, whether a sharp knife attracts more attention than a not-sharp knife. Sixty participants watched a cooking scene depicted in pictures where a woman held one of three items: a sharp knife, a not-sharp knife, or a detergent spray. A weapon focus effect was measured as recognition of the central information related to the knife or spray. In the three conditions recognition of the central information was better for the sharp knife condition than for the other conditions. This result suggests that a weapon focus can be produced by the sharpness of a knife.

Key words: weapon focus effect, sharpness, emotion, eyewitness testimony

The weapon focus effect (called a WFE in the following) is a phenomenon that an eyewitness remembers well the details about a weapon in a crime because the witness's attention was focused on the weapon. However, most of the previous studies about the WFE have not distinguished between the presence of a weapon and the emotion evoked by a crime (Mass & Kohnken, 1989). These two factors should be discussed independently because recent studies have suggested that emotion is not a factor necessary for occurrence of a WFE (Pickel, 1999). The present study therefore, focused on a physical feature of a weapon, that is, the sharpness of a knife. The purpose of this study was to investigate whether the degree of sharpness effected the WFE.

The participants viewed a sequence of pictures which depicted a female target, with a knife, in a kitchen. This scene was used so that it would not evoke an emotional state in the participants. Because a knife was consistent with a kitchen, the situation was regarded as usual. The kind of knife was varied so that the sharpness of the knife could be manipulated. For a sharp condition the female had a sharp knife, such as a slicer, whereas in a not-sharp condition she had a not-sharp knife, such as a vegetable cleaver. In addition, there was a control condition where the female had a detergent spray. The sharpness explanation predicts that recognition performance for detail information about the knife in the sharp condition would be better than in the not-sharp condition.

Methods

Participants Sixty university students (32 males and 28 females) served as participants.

Stimulus The stimulus consisted of a series of eight colored pictures that depicted the same event except that in the fifth picture the woman had either a sharp knife, a not-sharp knife or a detergent spray. The first four pictures showed a young man walking towards an apartment. The fifth picture showed that he has opened a door and met a woman in a kitchen who had a knife. The rest of the pictures showed that they had pastry in a dining room.

Procedure The participants were seated at a distance of 0.75 metres from a 21-inch CRT display. They answered the Japanese version of the UWIST
Mood Adjective checklist (JUMACL; Shirasawa & others, 1999) which measures energetic and tense arousal. Because tense arousal is known to be a negative emotion, the JUMACL was given to participants before, and after, watching the pictures in order to evaluate their emotional state.

After completing the first JUMACL the pictures were presented on the display at a rate of 6 seconds per picture with a 2 seconds inter-picture interval. Immediately after that the participants were asked to again check the JUMACL. They were then given a four-alternative recognition test about the pictures. The questions asked mainly about central and peripheral information in the fifth picture. The central information was spatially associated with the items the woman had whereas the peripheral information was not.

Results and Discussion

The scores for the first and second JUMACL test for tense arousal were analyzed first. An analysis of variance with a design of 3 (item type: sharp knife, not-sharp knife, or control) × 2 (time for the first or second answers) factors was calculated. A significant interaction was revealed between the item type and the time for the answer (F(2, 57) = 4.53, p < .01). In addition the analysis indicated a significant effect for the time for the answer for the sharp condition (F(1, 57) = 50.63, p < .01) and the control condition (F(1, 57) = 87.03, p < .01) but not for the not-sharp condition (F(1, 57) = 40.06, n.s.). An analysis with Ryan's test indicated a decrease in tense arousal from the first time for the answers to the second time in the sharp condition and control condition. It is concluded from the present study therefore, that the presence of a knife did not have a substantial impact on the tense arousal of the participants.

Another 3 (item type) × 2 (type of information, central or peripheral) ANOVA was calculated on the angular-transformed percent recognition. The mean percentage of correct recognition for the central and peripheral information in each type of item is listed in Figure 1. A significant interaction between the item type and the type of information was noted (F(2, 57) = 5.39, p < .01). The analysis also revealed a significant effect of the item type for central information (F(2, 114) = 5.73, p < .005) but not for peripheral information (F(2, 114) = 0.27, n.s.). An analysis with Ryan's test showed that recognition for central information in the sharp knife condition was higher than that in the not-sharp condition and the control condition (p < .05, and p < .001) respectively. In other words, recognition of a weapon was better for a sharp knife than for a not-sharp knife or control item.

These results indicate that a WFE occurs in a non-emotional situation where a knife is usually seen, and that the sharpness of a knife demands a certain amount of a participant's attention. Consequently the mechanism of a WFE is produced by the sharpness of a knife. However further research of this explanation concerning the sharpness is necessary, with controlled manipulation of the sharpness and other physical features.

References

