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Final Report on Grant # 97-LB-VX-K024 – Computerized Mug Books:
When Does Adding Multimedia Help?

(Note: The following report summarizes a more detailed presentation of the research that can be found in the following 2 journal articles:

McAllister, H. A., Stewart, H., & Loveland, J. (submitted). Effects of mug book size and computerized pruning on the usefulness of dynamic mug book procedures. Submitted to Psychology, Crime, and Law.

McAllister, H. A., Blair, Mark J., Cerone, Laura G. Laurent, Mark J. (in press). Multimedia mug books: How muti should the media be? Applied Cognitive Psychology.)

There is a sizable body of research on whether performance in line-ups or photospreads can be improved by the addition of dynamic cues such as voice or gait (see reviews by Shapiro & Penrod, 1986; Cutler, Berman, Penrod, & Fisher, 1994). McAllister, Bearden, Kohlmaier, and Warner, 1997 were concerned that the research on adding dynamic cues to lineups and photospreads might not generalize to mug books due to the fact that in mug books there is no suspect and the number of mug shots can be very large. The additional number of pictures that are viewed in standard, static mug books has been found to have a detrimental effect on an eyewitness' ability to identify the perpetrator (Laughery, Alexander, & Lane, 1971; Lindsay, Nosworthy, Martin, & Martynuck, 1994). This decrease in performance could be explained either by the interference of the additional decoy faces or by decay as a result of the time delay (Laughery et al., 1971). The negative effects of either interference or the time delay on a static mug books is compounded in a dynamic mug book since the dynamic cues involve increases in both time as well as in the amount of sensory information that could interfere with the original memory. McAllister et al. (1997) found that the problems associated with the additional length of a dynamic mug book could be solved by allowing witnesses choice as to whether dynamic cues were presented for a particular mug shot.

Given that providing witnesses choice as to whether dynamic cues would be presented improved performance, it might be possible to make further improvements by giving witnesses even greater control than allowed in McAllister et al. (1997) over the presentation of cues. In contrast to McAllister et al. (1997) where witnesses who chose dynamic cues received a set of three different types of cues, witnesses could be allowed choice not only as to whether dynamic cues would be presented, but also as to the type of dynamic cue presented. For example, some witnesses might believe that they had a very good memory of the voice but not of body or gait. It might be useful for such a witness to have the option of choosing to hear the voice without having to also view the person walking.

Experiment 1 tests if allowing witnesses to separate the desired from the undesired dynamic cues would improve performance over the procedure used in McAllister et al. (1997) where the cues were only available in combination.

Experiment 1
Method

Participants and Design

A total of 288 introductory psychology students were randomly assigned to conditions in

a 3 (Mug book type: Static, Dynamic-combined, or Dynamic-separable) X 2 (Perpetrator: Actor 1 or Actor 2) between subjects design.

Apparatus and Materials

Original Witnessing Stimuli. The original witnessing situation was the same as used in McAllister et al. (1997). It consisted of a color videotape of two males who were supposedly students participating in an experiment on collaborative problem solving. In the videotape, Actors 1 and 2 were shown being led into an experimental room by a male experimenter (Actor 3). All three individuals were seen full-body as they walked into the room. When Actors 1 and 2 were seated, the experimenter began to describe the experiment. Abruptly he stopped, claiming that he had forgotten something and left the room. After a brief conversation with Actor 1, Actor 2 got up and walked over to a computer that was sitting on a desk and began to punch some of the keys. Suddenly, he announced that he had tapped into the file with his grades and that he had just raised his grade by 30 points. He asked Actor 1 if he would like his grade raised also. Actor 1 declined, and Actor 2 returned to his seat. The experimenter entered the room, and the scene faded. The video clip lasted approximately 5 min. Actor 1 and Actor 2 were visible for the entire 5 min.

A second videotape was constructed using the same three individuals and the same script. However, in the second tape the perpetrator of the computer crime was played by the Actor 1 and the role of the innocent bystander was played by Actor 2.

Mug book Material. This material was the same as used in McAllister et al. (1997). Three years before the current experiment, 72 males from introductory psychology courses volunteered to have their mug shots taken. With the exception of race and age, no attempt was made to match these foils to the perpetrator. The filming was done in color with a S-VHS camcorder. First, foils were filmed head and shoulder, facing the camera. Foils orally gave the same name, address, and occupation. The length of the speech sample was approximately 10 s. Next, they were seated on a stool and turned at a pace to complete a 360° of their heads in 10 s. Finally, foils were filmed walking for approximately 10 s. Mug shot stills were created by selecting one frame from the head and shoulder video clip with the individual facing the camera. The same set of mug shot videos were made for each of the three actors in the computer crime scene; all three wore different clothes and shoes than in the computer crime video.

The video tapes of the foils and crime scenario actors were digitized and stored in files on a multimedia microcomputer. Visual images were displayed on a 35 cm S-VGA monitor. Audio was presented through two external speakers.

Procedure

Participants were instructed that they would be viewing a video tape of an experiment on collaborative problem solving. Their task was to watch the videotaped experiment and then rate the degree to which the two participants in the video tape collaborated. Half of the participants viewed the tape with Actor 1 as perpetrator; half viewed the tape with the Actor 2 as perpetrator.

After a 30 min delay participants began a mug book search. All conditions began with a static mug shot picture of the first individual in the file. The picture appeared in the upper two-thirds of the screen. The bottom third of the screen contained the question "Was this the person who committed the computer crime?" Underneath the question were three response buttons for participants to click; the buttons were labeled Yes, Maybe, and No. After a response was made,

the question and response buttons were replaced with a new question concerning their confidence. After this response was given, the screen was cleared and depending on the experimental condition, one of three things occurred.

In the static condition, the computer simply went to the next static picture. In the dynamic-combined condition, participants were asked the question "Would you like additional information?" For those participants that clicked the No button, the computer presented the static mug shot of the next individual just as in the static condition. For those participants who answered Yes, the computer presented the dynamic clip of the individual containing all three types of dynamic information. Following the clip, the static picture was returned to the screen and the two questions concerning identification and confidence were asked again. In dynamic-separable condition, participants were also asked if they wanted additional information. Just as in the dynamic-combined condition, when the No button was clicked, the computer presented the static mug shot of the next individual. A Yes response was followed by a second question "Which type of information would you like?" Participants chose one of four buttons labeled Voice, Rotating, Body, or None. The position of these buttons was counterbalanced across subjects. The type of information chosen determined which of the three 10 s excerpts from the 30 s video clip was presented. Following a choice of one of the three types of information, the question concerning the type of additional information wanted was repeated with the restriction that the button already chosen was removed. This procedure continued until the participant answer None or until all three types of dynamic information were presented. The static picture returned to the screen and the questions concerning identification and confidence were asked again. The same procedures were followed for all 74 mug shots. The perpetrator's mug shot always appeared in position 70.

Results

Lindsay et al. (1994) argued that mug book procedures should be considered as an investigative instrument, and therefore a lenient criterion for an identification should be used. Following their recommendations, Yes and Maybe responses were combined and treated as an identification; only No responses were treated as nonidentifications.

Performance Comparison of Mug Book Types

Identification of perpetrator and number of false positive identifications of foils were analyzed in separate 3(Mug Book Type: Dynamic-combined, Dynamic-separable, or Static) X 2(Perpetrator: Actor 1 or Actor 2) X 2(Sex of Participant) ANOVAs. There was a significant effect for the mug book type factor on the number of false positive identifications of foils, $F(2, 276) = 3.155$, $MS_e = 20.64$. Post-hoc analyses revealed that there were significantly fewer false positives in the dynamic-separable condition ($M = 2.76$) than in the static condition ($M = 4.50$) with neither condition being significantly different from the dynamic-combined condition ($M = 3.27$).

Participants in the dynamic-combined and the dynamic-separable conditions who chose to have additions cues presented for a particular mug shot were given a score of 1 for that mug shot and those that did not a score of 0. The choice scores for each of the foils 1 to 69 were summed to create a total foil choices score. The choice score for the perpetrator and the total foil choices score were analyzed in 2(Mug Book Type: Dynamic-combined or Dynamic-separable) X 2(Perpetrator: Actor 1 or Actor 2) X 2(Sex of Participant) ANOVAs. There was a significant

main effect for mug book type on both the perpetrator choice score, $F(1, 184) = 8.92$, $MS_e = .19$, and the total foil choices score, $F(1, 184) = 4.43$, $MS_e = 86.71$. The proportion of participants choosing additional cues for the perpetrator was higher in the dynamic-separable condition (.83) than in the dynamic-combined condition (.59). The number of foils 1 to 69 for which addition cues were selected was also higher in the dynamic-separable condition ($M = 12.47$) than in the dynamic-combined condition ($M = 8.97$).

Retrieval Cue Preferences within Dynamic-Separable Condition

Perpetrator. The first choice of each of the 80 participants (out of 96) in the dynamic-separable condition who chose additional cues for the perpetrator was analyzed using chi-square. There was a significant difference in the frequency with which the three types of information were chosen, $\chi^2(2, N = 80) = 49.38$. As can be seen in Table 1, voice was chosen most often and rotation least often.

For those participants who chose to view additional cues, the frequency with which the perpetrator's voice, rotation, and body was selected (collapsed over the three occasions to choose) was analyzed using Cochran's Q statistic for dependent samples. There was a significant difference in the frequencies for the three types of cues, $Q(2, N=80) = 47.45$. As can be seen from Table 1, voice was selected most often and rotation least often.

Foils. The number of times that the voice, rotation, and body cues were selected first was totaled for foils 1 to 69. A repeated measures factor for type of cue (voice, rotation, or body) was created and analyzed along with the between factors of perpetrator and sex. The results of the 3 (Type of Cue: Voice, Rotation, or Body) X 2 (Perpetrator: Actor 1 or Actor 2) X 2 (Sex of Participant) ANOVA revealed a significant main effect for the repeated measures type of cue factor, $F(2, 184) = 22.41$, $MS_e = 39.89$. As can be seen in Table 1, voice was most often chosen first and rotation was least often chosen first.

The total number of times that the voice, rotation, and body information were chosen for foils 1 to 69 were also analyzed in a 3 (Type of Cue: Voice, Rotation, or Body) X 2 (Perpetrator: Actor 1 or Actor 2) X 2 (Sex of Participant) ANOVA. Again there was a significant main effect for the type of cue factor, $F(2, 184) = 31.31$, $MS_e = 29.03$. As can be seen in Table 1, voice was most often chosen and rotation was least often chosen.

Discussion

One of the purposes of Experiment 1 was to determine if a multimedia mug book using dynamic-separable cues would be effective. Although the dynamic-separable condition had the highest percentage of correct identifications of the perpetrator, there were no significant differences on this measure. The failure to find mug book type differences on the perpetrator measure is consistent with past research (McAllister et al., 1997). There were significantly fewer false positive identifications of foils in the dynamic-separable condition than in the static mug book; however, although false positives in the dynamic-separable condition were also lower than in the dynamic-combined condition, the difference was not significant. The one area where the dynamic-separable condition was significantly different from the dynamic-combined condition was in the number of times that the dynamic cues were used. Dynamic cues were selected for both the perpetrator and the foils significantly more often in the dynamic-separable condition than in the dynamic-combined condition. In summary, the dynamic-separable condition would

seem to be superior to the static condition (based primarily on the reduction of false positives) and at least as effective as the dynamic-combined condition.

A second purpose of Experiment 1 was to determine which types of dynamic cues witnesses would find most important. In the past research, which has added cues such as a voice or movement, importance was inferred based on hits and false positives. In the current research, importance to the witness could be determined more directly by analyzing how often the type of information was chosen as well as how often it was chosen first. Using these criteria, the preferred type of dynamic cue was clearly voice. Voice was most often chosen and most often chosen first for both perpetrator and foils. The least preferred type of dynamic cue was consistently rotation. Rotation was least often chosen first and least often chosen overall for both perpetrators and foils.

The finding that the rotation information was not of particular interest to witnesses is rather ironic. One of the main features of rotation is that it provides a profile, and profiles are the one type of additional cue that often accompanies the front view mug shot in standard mug books; thus, the additional cue that is currently most often provided in mug books is the cue that is of least interest to the witness.

Although it is clear that witnesses in this experiment much preferred the voice cues, it is not clear that they really knew what would have been most useful to them. Unfortunately Experiment 1 cannot answer the question of how important the individual cues were. Even though most participants did select voice more often than the other cues, the majority also selected additional cues; due to the very small n , it was not possible to compare those witnesses who selected just voice cues with those who selected just body or just rotation. An additional experiment was necessary to compare the impact of the three types of cues on eyewitness mug book performance.

Experiment 2

Experiment 2 provides a test of the impact of the three types of dynamic cues. This was accomplished by limiting a witness' choice of additional dynamic cues to one type of cue. Participants were randomly assigned to a condition where they had one of the three types of cues available; a fourth group of participants was assigned to the static control condition.

Method

Participants and Design

A total of 240 introductory psychology students were randomly assigned to conditions in a 4 (Mug Book Type: Voice, Body, Rotation, or Static) X 2 (Perpetrator: Actor 1 or Actor 2) between subjects design. Participants were randomly assigned to one of the eight experimental conditions.

Apparatus and Materials

The original witnessing situation and mug book material were the same as used in Experiment 1.

Procedure

The procedure was the same as in Experiment 1 up to the point where the computerized mug book was explained and an example given. Participants were told that the computer would assign some of them to conditions where additional information would be provided, and that information would be one of three types--voice, rotation, or full body. Participants then went

through the example which showed them each of the three types of information. At the end of the example they were told that depending on the experimental condition to which they were assigned, it might or might not be possible to provide them with the type of information that they believed would be most useful to them. They were then asked which type of information that they would prefer, Voice, Rotation, or Full Body. The left to right position of these buttons was randomized for each participant.

Following the choice of the preferred type of dynamic cue, participants were randomly assigned to one of the four mug book conditions; thus, approximately one quarter of the participants were assigned to their preferred dynamic cue and one quarter were assigned to each of the other three conditions. Participants in the static condition went through exactly the same procedure as in Experiment 1. Each static picture was followed by the question of whether this was the perpetrator (Yes, Maybe, or No), and the second question concerning confidence. For the two dynamic conditions, the presentation of the static picture and the two questions was followed by the question "Would you like additional information?" For participants who answered No, the computer presented the static mug shot of the next individual. For participants who answered Yes, the computer presented either the voice, rotation, or full-body dynamic cue, depending on the participant's experimental condition. Following the dynamic cue, the static picture was returned to the screen, and the two questions concerning identification and confidence were asked again.

Results

Retrieval Cue Preference

Participants' choice of which of the three types of dynamic cues they preferred was analyzed using chi-square. There was a significant difference in the frequency with which the three types of information were chosen, $\chi^2(2, N = 240) = 103.83$. Of the 240 participants, 153 chose voice, 56 chose body, and only 31 chose rotation.

Performance Comparison of Mug Book Types

Identification of perpetrator and number of false-positive identifications of foils were analyzed in separate 4(Mug Book Type: Voice, Rotation, Body, or Static) X 2(Perpetrator: Actor 1 or Actor 2) X 2(Sex of Participant) ANOVAs. The only significant effect was a Mug book Type X Perpetrator interaction on the identification of the perpetrator, $F(3, 224) = 3.489$, $Ms_e = .178$. Newman-Keuls post-hoc analyses were conducted to explore further the nature of the interaction. As can be seen in Table 2, there were no significant differences in identification rates among the four mug book conditions for Actor 2 as perpetrator. For Actor 1 as perpetrator, the identification rate for the voice condition was significantly lower than for the body or static condition.

To determine if witnesses' preferred cues were related to how effectively the various types of cues were utilized, participants were divided into three groups (Preference: Voice, Rotation, or Body) based on their initially stated cue preference. Identification of perpetrator and number of false positive identifications of foils were analyzed in 3(Mug Book Type: Voice, Rotation, or Body) X 2(Perpetrator: Actor 1 or Actor 2) X 3 (Preference: Voice, Rotation, or Body) ANOVAs. No new significant interactions involving the preference factor resulted.

Discussion

The results of Experiment 2 confirmed those of Experiment 1: witnesses preferred voice cues. Contrary to Experiment 1 where witnesses could choose all of the cues, in Experiment 2 witnesses were asked to choose the one type of cue that they believed would be most useful to them. Voice was the clear first choice, full body a distant second choice, and rotation the last choice. These rankings were exactly the same as the ranking in Experiment 1 based on the type of cue chosen first and the cue chosen most often.

Although voice was clearly the preferred cue, was there evidence that it was the most useful? Analysis of the performance data found that contrary to past research with computerized mug books, there was no evidence that the addition of dynamic cues improved performance. In McAllister et al. (1997) and in Experiment 1, computerized mug books reduced the number of false-positive identifications of foils; however, in Experiment 2 there was no evidence that the dynamic mug books using single dynamic cues were superior to the static control. In addition, not only did single dynamic cues fail to improve witnesses' ability to identify the perpetrator, one of the computerized mug books (voice) produced significantly lower correct identification rates of Actor 1 as perpetrator than the static control condition.

The differential effectiveness of computerized mug books in Experiments 1 and 2 is consistent with the finding by Cutler and his colleagues with photospreads. It would appear that for mug books, just as for photospreads, the effectiveness of context cues is dependent on the cues being used in combination rather than singly.

The first two experiments established the type of dynamic information that should be included in dynamic mug books. The next question concerns the generalizability of the usefulness of providing dynamic information. For example, the size of the mug books in all the earlier research has been very small. Some research on mug book size with static mug books has found that increasing the size of mug books has a detrimental effect on an eyewitness ability to identify the perpetrator (Laughery, Alexander, & Lane, 1971; Lindsay, Nosworthy, Martin, & Martynuck, 1994).

To the extent that the additional pictures in static mug books interfere with memory for the perpetrator, witnesses using large mug books would be in even greater need for techniques to improve their memory. The dynamic retrieval cues provided in dynamic mug books might be of even greater importance with larger mug books than has been found in smaller mug books. However, for dynamic cues to provide some help to witnesses using larger mug books, it is of course necessary for them to choose the dynamic information at least as effectively as witnesses using small mug books. Although there is no hard evidence on this issue, it is possible to speculate about possible witness reactions. One possibility is that as witnesses search through large mug books they would become less and less certain of their memory and would use the dynamic information even more frequently than witnesses using small mug books. Alternately,

witnesses using large mug books might become increasingly frustrated with the vast numbers of pictures and attempt to speed up the process by cutting down on the use the dynamic information.

The purpose of Experiment 3 was to test the generalizability of the usefulness of dynamic mug books to larger sets of mug shots. The critical factor in the detrimental effects of larger mug books is not the number of pictures in the entire mug book but rather the number of pictures that are viewed before the perpetrator's picture is presented. Thus, the current research manipulated the position of the perpetrator's picture in the mug book.

Experiment 3

Method

Participants and Design

A total of 288 introductory psychology students were randomly assigned to conditions in a 2 (Mug book type: Static, or Dynamic) X 3 (Position of Perpetrator: 70, 140, or 210) X 2 (Perpetrator: Actor 1 or Actor 2) factorial design.

Apparatus and Materials

Original Witnessing Stimuli. The original witnessing situation was the same as used in Experiments 1 and 2..

Mug book Material. Additional mug shots were collected using the same procedure as described in Experiment 1 bringing the total number of mug shots to 210.

Procedure

The procedure was identical to that in Experiment 1 with the following exceptions: (a) there was no dynamic-separable conditions and (b) there were 210 pictures rather than 74. The perpetrator's mug shot appeared in one of three positions—70, 140, or 210. The same 69 foils always immediately preceded the perpetrator's picture regardless of its position.

Results

Performance Measures

Identification of perpetrator and number of false positive identifications of foils were analyzed in separate 2 (Mug Book Type: Dynamic or Static) X 3 (Position of Perpetrator: 70, 140, or 210) X 2 (Perpetrator: Actor 1 or Actor 2) ANOVAs. There was a significant effect of mug book type on identification of perpetrator, $F(1, 276) = 4.010, p < .046$ and number of false identifications of foils, $F(1, 276) = 21.637, p < .001$. As can be seen in Table 3, compared to witnesses in the static condition witnesses in the dynamic condition made fewer correct identifications of the perpetrator and made fewer false positive identifications of foils. Position of perpetrator had a significant effect on both identification of the perpetrator, $F(2, 276) = 3.852, p < .022$, and on false positive identifications of foils, $F(2, 276) = 3.865, p < .022$. As can be seen in Table 4, identifications of the perpetrator were greatest when the perpetrator was in position 70 and least when in position 140. As can also be seen in Table 2, the greatest number of false identification of the foils occurred when they were in positions 1 to 69 and the least when they were in positions 71 to 139.

Dynamic Information Usage

Participants in the dynamic condition who chose to have dynamic cues presented for a particular mug shot were given a score of 1 for that mug shot, and those that did not choose dynamic cues were given a score of 0. The dynamic usage scores for each of the 69 foils

preceding the perpetrator were summed to create a total foil dynamic usage score. The perpetrator dynamic usage score and the total foil dynamic usage score were analyzed in separate 2 (Mug Book Type: Dynamic or Static) X 3 (Position of Perpetrator: 70, 140, or 210) X 2 (Perpetrator: Actor 1 or Actor 2) ANOVAs. There was a significant effect of position on the total foil dynamic usage score, $F(2, 276) = 20.398$, $p < .001$, and a marginally significant effect of position on the perpetrator dynamic usage score, $F(2, 276) = 2.902$, $p < .058$. As can be seen in Table 4, total foil choices were greatest when the foils were in positions 1 to 69 and least when foils were in positions 141 to 209. As can be seen in Table 4, dynamic information was least often chosen for the perpetrator when the perpetrator was seen late (position 210) than in the earlier positions.

Discussion

Consistent with the earlier research on dynamic mug books, there were significantly fewer false positives in the dynamic condition than in the static condition. The finding on correct identifications is not as consistent with the past research. In the earlier experiments the dynamic and static conditions were not significantly different on identifications of the perpetrator. In the current research there was a higher percentage of correct identifications in the static condition than in the dynamic condition. Perhaps the most remarkable difference between the results of the current research and earlier is the overall lower rates of both correct identifications and false positives in the current research. The fact that the current research showed better performance on the false positives measure and worse performance on correct identifications is not as paradoxical as it may first appear. If the effect of having larger mug books was to make witnesses more selective in their choices, this would have the effect of decreasing the number of false positives as well as correct identifications.

One of the main purposes of the current research was to determine if dynamic information would be sought out more or less often as the number of mug shots increased. Here there is a very clear answer. As the number of pictures increased, the use of dynamic information decreased. When the foils appeared in positions 1 to 69, dynamic information was chosen an average of 7.54 times; this is very similar to the 8.54 times in McAllister et al. (1997) and the 7.45 times in McAllister et al. (1999). There was a significant decline in dynamic information usage when the foils appeared in positions 71 to 140 (2.23 times) and in positions 141 to 210 (1.30 times). The usage of dynamic information for the perpetrator also dropped as the number of preceding pictures increased.

The drastic decrease in the usage of dynamic information as the number of mug shots viewed increased calls into question the usefulness of dynamic mug books for larger sets of mug shots. If dynamic mug books are to be useful it would have to be in conjunction with a technique to prune the mug book down to a size where the dynamic information would be utilized.

The most recent advances in pruning procedures involve the use of computer facial recognition algorithms. These computer face-recognition algorithms have been in development at numerous research centers throughout the country, each center with their own approach to constructing an effective algorithm. Recent tests compared the performance of the algorithms (Phillips, Moon, Rauss, & Rizvi, 1997; Phillips, Wechsler, Huang, & Rauss, 1997); several of the more successful algorithms in these tests have been used to construct computerized mug books. These new computerized mug books allow the witness to sort a set of mug shots

according to their similarity to a chosen picture. After the computerized sorting by the facial recognition algorithm, the mug shots are then displayed starting with the most similar. Such a computerized pruning procedure could reduce the number of pictures seen before the picture of the perpetrator was encountered and thus potentially reducing the problems associated with viewing large numbers of mug shots. However, any gains due to decreased mug book size might be offset by problems associated with the increased homogeneity of the mug shots.

Accuracy rates on homogeneous sets of mug shots have been alarmingly low (e.g., Lindsay et al., 1994, Laughery et al., 1974). One possible solution to the problems with the similarity of mug shots found in pruned mug books would be to use dynamic information in conjunction with the pruning procedure. While the static mug pictures might be quite similar, the dynamic information would not be as similar. The same two individuals who might have similar appearing mug shots would be unlikely to have similar voices, gait, and body size. Dynamic cues could be of even greater use to witnesses in homogeneous mug books than the heterogeneous mug books used by McAllister et al. (1997).

Experiment 4

The purpose of Experiment 4 was to test the usefulness of computerized dynamic mug books in conjunction with mug books pruned by a computer facial-recognition program. Given the difficulty with using the dynamic mug book with large sets of mug book pictures, the only way that dynamic mug books could be useful would be with the smaller set of pictures that would result from a pruning procedure. Thus, it was important to show that the dynamic mug book could work with mug books that have been pruned. In addition, it was predicted that the dynamic mug books would reduce the problems that have occurred in the past with pruned, homogeneous mug books.

Method

Participants and Design

A total of 192 introductory psychology students were randomly assigned to conditions in a 2 (Mug book type: Static or Dynamic) X 2 (Similarity of mug shots: Similar or Random) X 2 (Perpetrator: Actor 1 or Actor 2) between subjects design.

Apparatus and Material

Original Witnessing Stimuli. The original witnessing situation was the same as used in Experiment 1.

Mug book Material. Three sets of mug book pictures were selected from the 209 pictures used in Experiment 1. The first set of pictures was constructed by submitting the 209 pictures to a computer facial recognition program which used Penev and Atick's (1996) local feature analysis to determine the similarity of each picture to Actor 1. The 69 pictures with the highest similarity rating were selected. The pictures were placed in the mug book in order of their similarity to Actor 1 with the picture rated most similar to Actor 1 being placed in position 69 immediately preceding Actor 1's picture. A second set of pictures was selected based on their similarity to Actor 2 using the same procedure. Finally, a third set of 69 pictures was randomly selected from the 208 pictures with no consideration of their similarity to either actor. It should be noted that these three groups of pictures were not totally independent; there was some small overlap.

Procedure

The procedure was identical to that in Experiment 1 with the following exceptions. All mug books contained 74 pictures with the perpetrator always in position 70. Participants who were randomly assigned to the video in which Actor 1 was the perpetrator were randomly assigned to view either a mug book containing the 69 most similar pictures to Actor 1 or the mug book containing 69 randomly selected pictures. Participants who were randomly assigned to the video in which Actor 2 was the perpetrator were randomly assigned to view the mug book containing the 69 most similar pictures to Actor 2 or the mug book containing the 69 randomly selected pictures.

Results

Performance Measures

Identification of perpetrator and number of false positive identifications of foils were analyzed in separate 2 (Mug Book Type: Dynamic or Static) X 2 (Similarity of mug shots: Similar or Random) X 2 (Perpetrator: Actor 1 or Actor 2) ANOVAs. There was a significant effect of mug book type on number of false identifications of foils, $F(1, 184) = 10.78, p < .001$. Witnesses made fewer false positive identifications of foils in the dynamic condition ($M = 3.66$) than in the static condition ($M = 6.10$). There was a significant main effects of the perpetrator factor on identification of the perpetrator, $F(1, 184) = 4.83, p < .029$. Witnesses were more likely to correctly identify Actor 2 (67%) than Actor 1 (51%). No other effects were significant. It is important to note that neither the main effect of the similarity factor nor any of the interactions involving the similarity factor were significant or even approaching significance..

Dynamic Information Usage

The perpetrator dynamic usage score and the total foil dynamic usage score were analyzed in separate 2 (Mug Book Type: Dynamic or Static) X 2 (Similarity of Mug shots: Similar or Random) X 2 (Perpetrator: Actor 1 or Actor 2) ANOVAs. There were no significant main effects or interactions in either analysis. The proportion of those seeking dynamic information for the perpetrator ($M = .49$) and the number of times the dynamic information was chosen for the 69 foils ($M = 8.59$) is comparable to past research.

Discussion

The purpose of Experiment 4 was to test the usefulness of computerized dynamic mug books when used with mug shots that had first been pruned by a program using a computer facial-recognition algorithm. Concerning the question of whether the dynamic mug book could work with mug shots that had first been pruned, the answer is a clear yes. The significant reduction in the number of false positives in the dynamic mug book condition as compared to the static mug book condition was quite similar to that found in past research (McAllister et al., 1997; McAllister et al. 1999). This finding of reduced false positives was not qualified by whether the mug shot pictures had been selected for their similarity to the perpetrator or had been randomly selected. Thus, it would appear that the dynamic mug book worked as well with mug shots that had been pruned as it did with mug shots that had not been pruned.

A second prediction was that the dynamic mug books would reduce the problems that have occurred with pruned, homogeneous mug books. In the past, some researchers have found that homogenous mug books reduced correct identifications and increased false positives. It was expected that there would be a main effect for the similarity factor which would be qualified by an interaction with the mug book type factor; the negative impact of similarity was expected to

be less with the dynamic mug book. Contrary to these predictions, there was no similarity effect to reduce; there was no significant effect of similarity or similarity by mug book type interaction on either correct identifications or false positives.

Given the importance of the similarity manipulation to pruning procedures (particularly to those based on the new computer facial recognition algorithms), the finding of only minimum impact deserves further discussion. The most favorable interpretation for these new programs is that the similarity of mug book pictures does not negatively impact on correct identification accuracy; however, a number of experiments have shown a negative impact of similarity. How can the current finding be reconciled with this research? One possibility is that the similarity ratings provided by the facial recognition algorithms are of a different nature than those used in the other research. Laughery et al. (1974) and Lindsay et al. (1994) based similarity on judgments made by humans. It is possible that the human similarity judgments made in this past research are different in nature from the similarity ratings made by a computer facial recognition algorithm.

Although it has been suggested that some of the computer facial recognition algorithms are reasonable models of human facial recognition (Turk, & Pentland, 1991), there has been little research that directly compared human similarity judgments with those made by computer facial recognition programs. Hancock, Bruce, and Burton (1998) compared similarity ratings from two different types of algorithms with those of human similarity judgments. Although the correlations were significant, they were extremely small (correlations averaged approximately $r = .15$); however, it should be noted that the particular algorithm used in the current research was not tested by Hancock et al. (1998).

Experiment 5

The purpose of Experiment 3 was to test the relationship between the computer algorithm similarity ratings used in Experiment 2 with human similarity judgments.

Method

Participants

A total of 85 introductory psychology students (41 males, 44 females) at Southeastern Louisiana University participated for course credit.

Apparatus and Material

Mug shot Material. The 209 pictures used in Experiment 1 as the still mug book pictures were the stimulus pictures to be rated for similarity. These 209 pictures had previously been submitted to a computer facial recognition program using local feature analysis to determine the similarity of each picture to Actor 1 and Actor 2.

Procedure

Participants were told that they would be presented with a number of faces which they were to compare with one target face. The experiment began with a static mug shot picture of the first individual in the file along with the static picture of either Actor 1 or Actor 2. Participants had been randomly assigned to compare each of the 209 pictures either to Actor 1 or to Actor 2. The picture of either Actor 1 or Actor 2 appeared in the upper right quarter of the screen and the first mug shot comparison picture was in the upper left quarter of the screen. Both pictures were visible at the same time. Below the two pictures was the question "How similar are the above two faces?" Underneath the question were seven response buttons labeled 1 to 7 anchored by the

statements Very Dissimilar and Very Similar. This procedure was continued until all 209 pictures had been judged for their similarity to either Actor 1 or Actor 2.

Results

A mean human similarity to Actor 1 judgment was calculated for each of the 209 faces. The 209 mean human similarity scores were then correlated with the 209 similarity scores generated by the computer facial recognition algorithm. The correlation was virtually nonexistent, $r(207) = .009$, $p < .899$. A similar analysis was conducted for similarity to Actor 2. The correlation between the human judgments of similarity and the computer algorithm similarity scores was again not significant, $r(207) = -.065$, $p < .349$.

Discussion

In the discussion of the results of Experiment 4, a number of possible explanations were given for the failure to find the expected decline in performance when mug books contain pictures similar to the perpetrator. One of the explanations, was that the human similarity judgments made in this past research are different in nature from the similarity ratings made by a computer facial recognition algorithm. The results of Experiment 5 provide strong support for this explanation. There was no correlation between human and computer judgments of facial similarity.

General Discussion of Experiments 3, 4, and 5

Experiment 3 demonstrated that multimedia mug books where witnesses are allowed to view additional audio-visual information should only be used with smaller mug books. The most obvious way to obtain smaller mug books is through some type of pruning procedure. The purpose of Experiment 4 was to determine how well the multimedia mug books would work with mug books that had been pruned. Given the recent interest in pruning mug books using computer facial recognition programs, it is important to know how well dynamic mug books could work in conjunction with these facial recognition programs. The results of Experiment 4 showed that the multimedia mug book programs can work effectively with pictures pruned by the computer facial recognition program. It had been predicted that the multimedia mug books might be particularly useful with pictures pruned for their similarity to the perpetrator, because they might help to reduce the accuracy problems that have been found to occur when mug books are too homogeneous. Surprisingly, there were no differences between mug books with pictures selected by the algorithm for their similarity to the perpetrator and mug books with a random selection of pictures.

Although there are a number of possible reasons for the failure to find the typical effect of similarity, Experiment 5 provided evidence that the reason may have been that similarity as determined by computer facial recognition algorithms does not relate very well to similarity as determined by the human witness. This is a particularly alarming finding given the extent to which similarity judgments are central to computerized mug books using facial recognition algorithms. These computer programs operate by having the human witness search through pictures until finding one that they feel is similar to the perpetrator, the computer then sorts the pictures to find those that the algorithm has determined are similar. The pictures are then displayed to the witness in order of the computer's determination of similarity to the picture chosen by the witness. To the extent that computer and human judgments of similarity are different, the usefulness of such programs would be called into question. Given that police

departments are already using such programs, it is crucial that the programs be evaluated. No matter how well an algorithm is able to locate a picture from a large set of pictures as was done in the recent FERET performance tests, if it isn't able to present the human witness with the type of faces that the human perceives as similar, then it would be useless in pruning mug books. Experiment 6 was conducted to test the effectiveness of such a program.

Experiment 6

Experiment 6 investigated the ability of undergraduates (N=56) to recognize a target photo of an individual (previously seen in a videotape) in a computerized mug shot album using algorithm-driven similarity judgments. These similarity judgments allowed the participants to initiate a search that returned the 200 photos in the database that most closely resembled the search photo. Overall, compared to the control condition, the facial recognition algorithm program caused an increase in false positive identifications and no increase in correct identifications.

The above summary of Experiment 6 should be extremely tentative. There was a difficulty with the resolution of the display which could have hurt overall performance. The experiment definitely needed to be repeated. Due to a lack of cooperation from the manufacturers of the computerized mug book program; the program was no longer available. The initial work with the program was done with a Beta version of the program whose use was limited to several months at which time the program would stop working. Attempts to get further extensions and or to purchase the program were rejected by the company. Similar refusals came from the other leading producer of an algorithm based mug book. The lack of cooperation from these companies is particularly distressing when one considers that federal funds went into the development of the algorithms on which the programs are based. Clearly, additional research should be conducted before any more police departments adopt these mug book programs.

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Table 1
Frequency of Retrieval Cue Choices for Perpetrator and Foils in Experiment 1 Dynamic-Separable Condition

Measure	Type of Cue Chosen		
	Voice	Body	Rotation
Perpetrator ^a			
Number Choosing First	55	20	5
Number Choosing	75	66	43
Foils 1 to 69 ^b			
Mean First Choices	7.26	2.61	.82
Mean Total Choices	9.43	5.93	2.73

Note:

- a. Number Choosing First (and Number Choosing) could potentially range from 0 (no one in the dynamic-separable condition choosing this type cue) to 96 (all participants in the dynamic-separable condition choosing this type cue).
- b. Mean choices could potentially range from 0 (no one selecting this type of cue for any of the 69 foils) to 69 (everyone selecting this type of cue for all of the 69 foils).

Table 2
Perpetrator Correct Identifications in Experiment 2 as a Function of Mug Book Type and Perpetrator

Perpetrator	Mug Book Type			
	Voice	Rotation	Body	Static
Actor 1	47.50 _a	75.00 _{ab}	82.00 _b	85.00 _b
Actor 2	76.52 _a	80.16 _a	74.17 _a	76.31 _a

Note: Within a row means with different subscripts differ significantly.

Table 3
Perpetrator Correct Identifications, Perpetrator Confidence, Preceding Foils False Positives, and Average Foil Confidence in Experiment 1 as a Function of Mug Book Type

Measure	Mug Book Type	
	Dynamic	Static
Perpetrator Id (% Correct)	46.50	58.11
Preceding Foils # False Positives	1.86	3.97

Note: The number of false positives could potentially range from 0 (no foils falsely identified) to 69 (all foils falsely identified).

Table 4
Perpetrator Correct Identifications, Preceding Foil False Positives, Perpetrator Dynamic Usage, Total Foil Dynamic Usage in Experiment 1 as a Function of Perpetrator Position

Measure	Position of Perpetrator		
	70	140	210
Perpetrator Id (% Correct)	60.79 _a	41.49 _b	54.64 _{ab}
Preceding Foils # False Positives	3.71 _a	2.18 _b	2.86 _{ab}
Perpetrator Dynamic Usage (% Using)	54.00 _a	54.17 _a	32.61 _a
Total Foil Dynamic Usage	7.54 _a	2.23 _b	1.30 _{ab}

Note: Within a row means with different subscripts differ significantly

- a. The number of false positives could potentially range from 0 (no foils falsely identified) to 69 (all foils falsely identified).
- b. The number of Total Foil Dynamic Usage could potentially range from 0 (no dynamic information chosen) to 69 (dynamic information chosen for every foil).

**Experiment 1 – Data
Filename nijexpl**

Identification of Variables

sub - Subject #

sex – subject sex 1 male, 2 female

cond – 1 dynamic combined, 2 static, 3 separable

perp – 1 Actor 1 as perpetrator, 2 Actor 2 as perpetrator

cc70 - confidence in perpetrator judgment 1 low to 7 high

dd70 - Identification of Perpetrator 1 identify, 0 fail to identify

av70 – dynamic information chosen for perp 1 yes, 0 no

numav – number of times dynamic information chosen for foils

ddsum – number of false positive identifications of foils

conaver – average confidence for foil judgments 1 low to 7 high

numfv – number of times voice chosen first for foils

numfr – number of times rotation chosen first for foils

numfb – number of times body chosen first for foils

fv70 – voice chosen first for perpetrator 1- yes, 0- no

fb70 - body chosen first for perpetrator 1- yes, 0-no

fr70 – rotation chosen first for perpetrator 1- yes, 0-no

totv70 – voice information chosen for perpetrator 1- yes, 0 - no

totr70 – rotation information chosen for perpetrator 1- yes, 0-no

totb70 – body information chosen for perpetrator 1- yes, 0 - no

numv – total number of times voice chosen for foils

numb - total number of times body chosen for foils

numr - total number of times rotation chosen for foils

Data from first five subjects and last five subjects follows:

nijexp1

	sub	sex	cond	perp	cc70	dd70	av70	numav	ddsum	conaver
1	1.00	1.00	2.00	1.00	6.00	1.00	.00	.00	12.00	6.00
2	2.00	1.00	1.00	1.00	7.00	1.00	.00	3.00	3.00	6.87
3	3.00	1.00	3.00	1.00	7.00	1.00	1.00	4.00	.00	7.00
4	4.00	1.00	2.00	1.00	3.00	1.00	.00	.00	2.00	6.61
5	5.00	1.00	3.00	1.00	7.00	1.00	1.00	8.00	4.00	6.96

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1/3

nijexp1

	numfv	numfr	numfb	fv70	fb70	fr70	totv70	totr70	totb70	numv
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	3.00	.00	.00	1.00	.00	.00	1.00	1.00	1.00	3.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	7.00	.00	.00	1.00	.00	.00	1.00	.00	1.00	7.00

01/08/01 15:28:59

2/3

nijexp1

	numb	numr
1	.00	.00
2	.00	.00
3	1.00	.00
4	.00	.00
5	3.00	2.00

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3/3

nijexp1

	sub	sex	cond	perp	cc70	dd70	av70	numav	ddsum	conaver
284	769.00	2.00	3.00	1.00	5.00	1.00	1.00	9.00	4.00	6.86
285	623.00	1.00	1.00	1.00	6.00	1.00	1.00	14.00	1.00	5.97
286	745.00	2.00	3.00	2.00	4.00	1.00	1.00	9.00	3.00	6.84
287	744.00	2.00	2.00	2.00	1.00	1.00	.00	.00	7.00	6.71
288	708.00	2.00	1.00	2.00	4.00	1.00	.00	.00	4.00	6.88

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1/3

nijexp1

	numfv	numfr	numfb	fv70	fb70	fr70	totv70	totr70	totb70	numv
284	5.00	2.00	1.00	1.00	.00	.00	1.00	1.00	1.00	8.00
285	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
286	.00	.00	8.00	1.00	.00	.00	1.00	.00	1.00	5.00
287	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
288	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

nijexp1

	numb	numr
284	5.00	5.00
285	.00	.00
286	8.00	1.00
287	.00	.00
288	.00	.00

01/08/01 15:31:02

3/3

**Experiment 2 – Data
Filename nijexp2**

Identification of Variables

sub - Subject #

sex – subject sex 1 male, 2 female

cond – Dynamic information 1 voice, 2 rotation, 3 body, 4 static

perp – 1 Actor 1 as perpetrator, 2 Actor 2 as perpetrator

av70 – dynamic information chosen for perp 1 yes, 0 no

cc70 - confidence in perpetrator judgment 1 low to 7 high

dd70 - Identification of Perpetrator 1 identify, 0 fail to identify

prefer – dynamic information preferred by subject 1 voice, 2 rotation 3 body

numav – number of times dynamic information chosen for foils

ddsum – number of false positive identifications of foils

conaver – average confidence for foil judgments 1 low to 7 high

Data from first five subjects and last five subjects follows:

nijexp2_1

	sub	sex	cond	perp	av70	cc70	dd70	prefer	numav	ddsum
1	.00	1.00	3.00	2.00	1.00	6.00	1.00	3.00	13.00	7.00
2	1.00	1.00	1.00	2.00	1.00	7.00	.00	3.00	4.00	.00
3	2.00	1.00	4.00	2.00	.00	6.00	1.00	3.00	.00	6.00
4	3.00	1.00	2.00	2.00	1.00	6.00	.00	1.00	2.00	.00
5	4.00	1.00	2.00	2.00	.00	7.00	.00	1.00	5.00	4.00

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1/2

nijexp2_1

	avercon
1	6.78
2	7.00
3	6.75
4	6.91
5	6.83

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2/2

**Experiment 3 – Data
Filename nijexp3**

Identification of Variables

sub - Subject #

sex – subject sex 1 male, 2 female

mugtype – dynamic1, 2 static

position – perpetrator position in mug book 1 70, 2 140, 3 210

perp – 1 Actor 1 as perpetrator, 2 Actor 2 as perpetrator

av70 – dynamic information chosen for perp 1 yes, 0 no

cc70 - confidence in perpetrator judgment 1 low to 7 high

dd70 - Identification of Perpetrator 1 identify, 0 fail to identify

numav – number of times dynamic information chosen for foils

ddsum – number of false positive identifications of foils

avercon – average confidence for foil judgments 1 low to 7 high

Data from first five subjects and last five subjects follows:

nijexp3

	sub	sex	mugtype	position	perp	av70	cc70	dd70	numav	ddsum
1	1.00	1.00	1.00	1.00	1.00	1.00	7.00	1.00	9.00	1.00
2	2.00	1.00	1.00	2.00	1.00	1.00	6.00	1.00	4.00	.00
3	3.00	1.00	1.00	3.00	1.00	.00	5.00	.00	1.00	2.00
4	5.00	1.00	2.00	1.00	1.00	.00	6.00	1.00	.00	14.00
5	6.00	1.00	2.00	3.00	1.00	.00	7.00	.00	.00	1.00

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1/2

nijexp3

	avercon
1	6.90
2	7.00
3	6.91
4	6.14
5	6.97

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2/2

nijexp3

	sub	sex	mugtype	position	perp	av70	cc70	dd70	numav	ddsum
284	547.00	2.00	1.00	2.00	2.00	1.00	5.00	1.00	1.00	2.00
285	550.00	2.00	1.00	2.00	2.00	.00	7.00	.00	3.00	2.00
286	601.00	1.00	1.00	1.00	1.00	1.00	6.00	1.00	3.00	.00
287	607.00	2.00	2.00	3.00	2.00	.00	1.00	.00	.00	2.00
288	610.00	2.00	1.00	1.00	1.00	.00	5.00	1.00	1.00	14.00

01/08/01 18:24:46

1/2

nijexp3

	avercon
284	6.91
285	6.23
286	7.00
287	6.87
288	5.96

01/08/01 18:24:46

2/2

Experiment 4 – Data
Filename nijexp4

Identification of Variables

sub - Subject #

sex – subject sex 1 male, 2 female

cond – 1 dynamic, 2 static

similar– 1 pruned by computer, 2 randomly selected

perp – 1 Actor 1 as perpetrator, 2 Actor 2 as perpetrator

av70 – dynamic information chosen for perp 1 yes, 0 no

cc70 - confidence in perpetrator judgment 1 low to 7 high

dd70 - Identification of Perpetrator 1 identify, 0 fail to identify

numav – number of times dynamic information chosen for foils

ddsum – number of false positive identifications of foils

avercon – average confidence for foil judgments 1 low to 7 high

Data from first five subjects and last five subjects follows:

nijexp4

	sub	sex	cond	similar	perp	av70	cc70	dd70	numav	ddsum
1	301.00	1.00	1.00	1.00	1.00	1.00	6.00	1.00	6.00	2.00
2	302.00	1.00	2.00	2.00	1.00	.00	7.00	1.00	.00	9.00
3	303.00	1.00	2.00	1.00	1.00	.00	7.00	.00	.00	3.00
4	304.00	1.00	1.00	2.00	1.00	1.00	5.00	1.00	5.00	.00
5	305.00	1.00	2.00	2.00	1.00	.00	4.00	1.00	.00	13.00

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1/2

nijexp4

	avercon
1	6.91
2	6.43
3	6.99
4	6.90
5	4.68

01/09/01 12:19:28

2/2

nijexp4

	sub	sex	cond	similar	perp	av70	cc70	dd70	numav	ddsum
188	501.00	1.00	1.00	1.00	1.00	.00	7.00	.00	12.00	5.00
189	503.00	1.00	2.00	2.00	2.00	.00	4.00	1.00	.00	6.00
190	601.00	2.00	1.00	2.00	2.00	.00	5.00	1.00	1.00	.00
191	602.00	2.00	2.00	2.00	1.00	.00	7.00	.00	.00	6.00
192	502.00	1.00	2.00	2.00	1.00	.00	7.00	.00	.00	3.00

nijexp4

	avercon
188	6.61
189	6.65
190	7.00
191	6.65
192	6.91

01/09/01 12:20:39

2/2

Experiment 5 – Data
Filename nijexp5D (Actor 1 Data) and nijexp5L (Actor 2 Data)

Identification of Variables

Columns with names subXXX represent similarity judgments made by subject XXX
Rows with names VARXXX represent similarity judgments for mug shot XXX
similar – human judgment score of similarity of mug shot to perp averaged over subjects
computer – computer algorithm similarity score of mug shot to perpetrator

Data from first five subjects and last five subjects follows:

	case_lbl	sub001	sub002	sub003	sub004	sub005
1	VAR1	6.00	3.00	1.00	4.00	3.00
2	VAR10	3.00	1.00	3.00	2.00	5.00
3	VAR100	7.00	1.00	1.00	2.00	5.00
4	VAR101	2.00	2.00	7.00	1.00	5.00
5	VAR102	3.00	2.00	6.00	2.00	4.00
6	VAR103	5.00	1.00	7.00	2.00	4.00
7	VAR104	2.00	1.00	1.00	1.00	5.00
8	VAR105	3.00	1.00	5.00	1.00	1.00
9	VAR106	2.00	1.00	4.00	1.00	2.00
10	VAR107	3.00	1.00	7.00	1.00	3.00
11	VAR108	4.00	3.00	4.00	1.00	7.00
12	VAR109	2.00	1.00	7.00	1.00	6.00
13	VAR11	5.00	1.00	4.00	2.00	1.00
14	VAR110	1.00	1.00	2.00	1.00	4.00
15	VAR111	2.00	1.00	3.00	1.00	2.00
16	VAR112	6.00	1.00	3.00	2.00	1.00
17	VAR113	5.00	2.00	1.00	1.00	2.00
18	VAR114	4.00	1.00	6.00	1.00	1.00
19	VAR115	3.00	2.00	5.00	1.00	7.00
20	VAR116	2.00	2.00	1.00	2.00	6.00
21	VAR117	3.00	4.00	5.00	1.00	6.00
22	VAR118	3.00	2.00	1.00	3.00	6.00
23	VAR119	1.00	1.00	5.00	2.00	4.00
24	VAR12	1.00	1.00	3.00	2.00	1.00
25	VAR120	2.00	1.00	7.00	2.00	1.00
26	VAR121	1.00	1.00	5.00	1.00	1.00
27	VAR122	2.00	1.00	6.00	2.00	3.00
28	VAR123	7.00	1.00	1.00	1.00	6.00
29	VAR124	5.00	1.00	7.00	2.00	1.00
30	VAR125	4.00	1.00	6.00	2.00	2.00
31	VAR126	1.00	1.00	3.00	1.00	4.00
32	VAR127	7.00	2.00	7.00	1.00	6.00
33	VAR128	4.00	2.00	1.00	1.00	4.00
34	VAR129	3.00	2.00	1.00	3.00	7.00
35	VAR13	7.00	1.00	6.00	3.00	5.00
36	VAR130	3.00	2.00	3.00	1.00	7.00
37	VAR131	6.00	2.00	7.00	2.00	7.00
38	VAR132	2.00	1.00	5.00	1.00	5.00

	case_lbl	sub001	sub002	sub003	sub004	sub005
39	VAR133	1.00	1.00	3.00	2.00	1.00
40	VAR134	4.00	3.00	3.00	2.00	4.00
41	VAR135	3.00	1.00	4.00	2.00	2.00
42	VAR136	5.00	1.00	6.00	1.00	4.00
43	VAR137	3.00	2.00	7.00	2.00	3.00
44	VAR138	6.00	1.00	6.00	2.00	2.00
45	VAR139	5.00	2.00	7.00	2.00	1.00
46	VAR14	5.00	1.00	1.00	3.00	3.00
47	VAR140	6.00	2.00	2.00	3.00	6.00
48	VAR141	6.00	1.00	3.00	1.00	5.00
49	VAR142	6.00	1.00	7.00	1.00	3.00
50	VAR143	6.00	2.00	6.00	1.00	6.00
51	VAR144	2.00	1.00	1.00	1.00	4.00
52	VAR145	2.00	2.00	4.00	2.00	4.00
53	VAR146	1.00	1.00	2.00	1.00	3.00
54	VAR147	2.00	3.00	3.00	3.00	1.00
55	VAR148	1.00	1.00	1.00	1.00	1.00
56	VAR149	1.00	1.00	6.00	1.00	5.00
57	VAR15	5.00	1.00	4.00	1.00	3.00
58	VAR150	6.00	1.00	5.00	2.00	6.00
59	VAR151	5.00	1.00	4.00	3.00	4.00
60	VAR152	6.00	1.00	7.00	2.00	5.00
61	VAR153	3.00	1.00	6.00	1.00	3.00
62	VAR154	6.00	1.00	5.00	1.00	4.00
63	VAR155	3.00	1.00	1.00	2.00	2.00
64	VAR156	7.00	1.00	6.00	1.00	2.00
65	VAR157	5.00	1.00	6.00	1.00	3.00
66	VAR158	6.00	3.00	3.00	2.00	5.00
67	VAR159	4.00	1.00	7.00	1.00	2.00
68	VAR16	6.00	2.00	2.00	2.00	6.00
69	VAR160	6.00	1.00	5.00	2.00	3.00
70	VAR161	7.00	3.00	3.00	2.00	7.00
71	VAR162	1.00	1.00	4.00	1.00	4.00
72	VAR163	4.00	1.00	3.00	1.00	3.00
73	VAR164	2.00	1.00	6.00	2.00	2.00
74	VAR165	6.00	3.00	6.00	1.00	2.00
75	VAR166	3.00	1.00	1.00	1.00	1.00
76	VAR167	6.00	2.00	5.00	3.00	7.00

	case_lbl	sub001	sub002	sub003	sub004	sub005
77	VAR168	2.00	1.00	5.00	1.00	4.00
78	VAR169	5.00	1.00	4.00	1.00	2.00
79	VAR17	3.00	1.00	4.00	1.00	2.00
80	VAR170	4.00	1.00	4.00	2.00	2.00
81	VAR171	6.00	1.00	4.00	2.00	4.00
82	VAR172	6.00	2.00	7.00	1.00	4.00
83	VAR173	5.00	1.00	5.00	2.00	5.00
84	VAR174	2.00	1.00	3.00	1.00	2.00
85	VAR175	5.00	3.00	5.00	3.00	1.00
86	VAR176	6.00	3.00	6.00	2.00	4.00
87	VAR177	6.00	3.00	6.00	2.00	7.00
88	VAR178	4.00	3.00	1.00	2.00	3.00
89	VAR179	5.00	2.00	2.00	1.00	5.00
90	VAR18	7.00	1.00	5.00	4.00	7.00
91	VAR180	2.00	1.00	5.00	2.00	3.00
92	VAR181	4.00	2.00	1.00	2.00	2.00
93	VAR182	3.00	1.00	1.00	1.00	1.00
94	VAR183	1.00	2.00	5.00	1.00	1.00
95	VAR184	3.00	1.00	1.00	1.00	1.00
96	VAR185	2.00	1.00	5.00	2.00	1.00
97	VAR186	6.00	1.00	6.00	1.00	1.00
98	VAR187	3.00	3.00	2.00	1.00	5.00
99	VAR188	2.00	1.00	1.00	2.00	5.00
100	VAR189	6.00	2.00	7.00	1.00	5.00
101	VAR19	6.00	1.00	1.00	1.00	2.00
102	VAR190	5.00	2.00	6.00	1.00	3.00
103	VAR191	4.00	3.00	5.00	1.00	2.00
104	VAR192	2.00	2.00	1.00	1.00	5.00
105	VAR193	5.00	1.00	7.00	1.00	2.00
106	VAR194	3.00	1.00	1.00	1.00	3.00
107	VAR195	3.00	2.00	7.00	1.00	6.00
108	VAR196	5.00	3.00	5.00	2.00	7.00
109	VAR197	4.00	3.00	1.00	1.00	5.00
110	VAR198	5.00	1.00	2.00	1.00	4.00
111	VAR199	1.00	1.00	1.00	1.00	1.00
112	VAR2	2.00	1.00	1.00	2.00	1.00
113	VAR20	1.00	1.00	5.00	5.00	5.00
114	VAR200	2.00	1.00	3.00	1.00	1.00

	case_lbl	sub001	sub002	sub003	sub004	sub005
115	VAR201	2.00	1.00	7.00	1.00	1.00
116	VAR202	4.00	1.00	5.00	1.00	1.00
117	VAR203	3.00	3.00	6.00	2.00	6.00
118	VAR204	4.00	1.00	7.00	1.00	3.00
119	VAR205	1.00	3.00	1.00	1.00	2.00
120	VAR206	1.00	1.00	1.00	1.00	1.00
121	VAR207	3.00	3.00	6.00	2.00	7.00
122	VAR208	3.00	2.00	3.00	1.00	4.00
123	VAR209	2.00	1.00	1.00	1.00	3.00
124	VAR21	2.00	1.00	6.00	1.00	2.00
125	VAR22	1.00	1.00	6.00	3.00	4.00
126	VAR23	4.00	1.00	6.00	2.00	2.00
127	VAR24	2.00	2.00	5.00	4.00	5.00
128	VAR25	1.00	2.00	2.00	3.00	2.00
129	VAR26	5.00	2.00	2.00	2.00	7.00
130	VAR27	4.00	2.00	6.00	1.00	4.00
131	VAR28	3.00	2.00	5.00	2.00	4.00
132	VAR29	1.00	1.00	3.00	1.00	1.00
133	VAR3	5.00	2.00	3.00	2.00	2.00
134	VAR30	7.00	1.00	2.00	1.00	1.00
135	VAR31	5.00	1.00	1.00	2.00	3.00
136	VAR32	5.00	1.00	1.00	2.00	1.00
137	VAR33	1.00	1.00	5.00	1.00	1.00
138	VAR34	7.00	2.00	1.00	2.00	4.00
139	VAR35	4.00	1.00	2.00	1.00	1.00
140	VAR36	3.00	1.00	1.00	2.00	5.00
141	VAR37	2.00	1.00	4.00	1.00	4.00
142	VAR38	2.00	1.00	7.00	2.00	3.00
143	VAR39	1.00	1.00	4.00	1.00	1.00
144	VAR4	4.00	1.00	2.00	4.00	1.00
145	VAR40	6.00	1.00	7.00	3.00	2.00
146	VAR41	2.00	2.00	7.00	1.00	2.00
147	VAR42	4.00	1.00	7.00	2.00	2.00
148	VAR43	2.00	1.00	6.00	2.00	3.00
149	VAR44	4.00	1.00	5.00	1.00	2.00
150	VAR45	5.00	4.00	1.00	5.00	4.00
151	VAR46	6.00	1.00	1.00	2.00	3.00
152	VAR47	3.00	3.00	7.00	2.00	4.00

	case_lbl	sub001	sub002	sub003	sub004	sub005
153	VAR48	5.00	1.00	7.00	1.00	3.00
154	VAR49	6.00	2.00	5.00	1.00	1.00
155	VAR5	1.00	1.00	3.00	3.00	1.00
156	VAR50	1.00	1.00	7.00	1.00	1.00
157	VAR51	6.00	2.00	6.00	2.00	4.00
158	VAR52	4.00	1.00	7.00	1.00	1.00
159	VAR53	2.00	2.00	3.00	1.00	2.00
160	VAR54	4.00	2.00	2.00	2.00	2.00
161	VAR55	1.00	1.00	7.00	1.00	2.00
162	VAR56	1.00	2.00	5.00	2.00	7.00
163	VAR57	1.00	1.00	3.00	1.00	3.00
164	VAR58	5.00	1.00	6.00	1.00	4.00
165	VAR59	2.00	1.00	1.00	2.00	3.00
166	VAR6	2.00	2.00	1.00	2.00	1.00
167	VAR60	6.00	3.00	5.00	2.00	7.00
168	VAR61	5.00	2.00	7.00	1.00	2.00
169	VAR62	6.00	1.00	5.00	1.00	1.00
170	VAR63	1.00	1.00	1.00	3.00	1.00
171	VAR64	3.00	3.00	4.00	3.00	5.00
172	VAR65	2.00	3.00	4.00	1.00	1.00
173	VAR66	4.00	1.00	7.00	1.00	5.00
174	VAR67	3.00	2.00	5.00	1.00	4.00
175	VAR68	6.00	1.00	4.00	3.00	1.00
176	VAR69	4.00	1.00	3.00	1.00	4.00
177	VAR7	2.00	1.00	2.00	4.00	4.00
178	VAR70	5.00	1.00	6.00	1.00	2.00
179	VAR71	2.00	1.00	7.00	3.00	5.00
180	VAR72	3.00	2.00	5.00	1.00	2.00
181	VAR73	1.00	1.00	1.00	2.00	1.00
182	VAR74	2.00	1.00	1.00	2.00	1.00
183	VAR75	3.00	3.00	7.00	1.00	3.00
184	VAR76	3.00	1.00	5.00	1.00	3.00
185	VAR77	2.00	1.00	5.00	1.00	2.00
186	VAR78	1.00	1.00	1.00	2.00	6.00
187	VAR79	5.00	1.00	5.00	2.00	5.00
188	VAR8	4.00	2.00	7.00	3.00	2.00
189	VAR80	2.00	1.00	6.00	1.00	5.00
190	VAR81	6.00	1.00	5.00	4.00	7.00

	case_lbl	sub001	sub002	sub003	sub004	sub005
191	VAR82	4.00	3.00	5.00	2.00	7.00
192	VAR83	3.00	3.00	4.00	3.00	7.00
193	VAR84	1.00	1.00	1.00	3.00	3.00
194	VAR85	1.00	1.00	7.00	3.00	2.00
195	VAR86	6.00	1.00	7.00	2.00	5.00
196	VAR87	5.00	1.00	3.00	4.00	4.00
197	VAR88	3.00	2.00	4.00	2.00	2.00
198	VAR89	4.00	1.00	7.00	1.00	3.00
199	VAR9	5.00	1.00	3.00	2.00	3.00
200	VAR90	2.00	1.00	5.00	2.00	1.00
201	VAR91	6.00	1.00	7.00	2.00	7.00
202	VAR92	4.00	1.00	7.00	1.00	5.00
203	VAR93	7.00	3.00	7.00	2.00	2.00
204	VAR94	5.00	1.00	5.00	1.00	5.00
205	VAR95	6.00	1.00	6.00	2.00	5.00
206	VAR96	4.00	6.00	5.00	2.00	4.00
207	VAR97	3.00	2.00	2.00	1.00	4.00
208	VAR98	6.00	3.00	6.00	1.00	4.00
209	VAR99	5.00	1.00	4.00	2.00	1.00

	sub081	sub082	sub083	sub084	sub085
1	4.00	2.00	3.00	5.00	5.00
2	1.00	3.00	2.00	3.00	3.00
3	2.00	1.00	1.00	4.00	2.00
4	1.00	1.00	1.00	3.00	2.00
5	4.00	1.00	1.00	1.00	2.00
6	4.00	2.00	1.00	5.00	5.00
7	3.00	1.00	1.00	6.00	1.00
8	1.00	1.00	1.00	1.00	2.00
9	1.00	1.00	1.00	2.00	2.00
10	1.00	1.00	1.00	3.00	4.00
11	1.00	2.00	1.00	2.00	3.00
12	2.00	1.00	1.00	2.00	3.00
13	4.00	3.00	1.00	4.00	4.00
14	1.00	1.00	1.00	1.00	2.00
15	1.00	2.00	1.00	1.00	4.00
16	2.00	2.00	1.00	1.00	3.00
17	2.00	1.00	1.00	1.00	3.00
18	1.00	1.00	1.00	5.00	4.00
19	2.00	2.00	2.00	3.00	2.00
20	3.00	1.00	1.00	5.00	6.00
21	3.00	4.00	3.00	7.00	2.00
22	2.00	4.00	2.00	3.00	2.00
23	1.00	4.00	1.00	3.00	3.00
24	4.00	2.00	1.00	1.00	3.00
25	1.00	2.00	1.00	1.00	2.00
26	1.00	1.00	2.00	1.00	2.00
27	2.00	1.00	2.00	5.00	4.00
28	5.00	3.00	1.00	5.00	2.00
29	1.00	1.00	1.00	1.00	1.00
30	2.00	3.00	1.00	6.00	5.00
31	3.00	2.00	1.00	5.00	3.00
32	6.00	3.00	2.00	3.00	3.00
33	2.00	3.00	1.00	7.00	2.00
34	1.00	3.00	1.00	5.00	4.00
35	1.00	2.00	2.00	1.00	4.00
36	1.00	3.00	1.00	2.00	3.00
37	2.00	3.00	1.00	1.00	3.00
38	1.00	2.00	1.00	1.00	2.00

	sub081	sub082	sub083	sub084	sub085
39	1.00	1.00	1.00	1.00	2.00
40	3.00	1.00	2.00	3.00	4.00
41	1.00	1.00	1.00	1.00	2.00
42	2.00	1.00	1.00	7.00	4.00
43	1.00	1.00	2.00	6.00	5.00
44	2.00	1.00	1.00	1.00	2.00
45	3.00	2.00	1.00	4.00	2.00
46	1.00	1.00	1.00	3.00	3.00
47	3.00	2.00	1.00	6.00	6.00
48	1.00	1.00	1.00	1.00	2.00
49	2.00	1.00	1.00	1.00	2.00
50	3.00	2.00	1.00	5.00	3.00
51	1.00	2.00	1.00	1.00	2.00
52	2.00	1.00	2.00	3.00	2.00
53	1.00	1.00	1.00	2.00	2.00
54	2.00	1.00	1.00	1.00	4.00
55	2.00	2.00	1.00	1.00	3.00
56	2.00	1.00	1.00	3.00	4.00
57	2.00	1.00	1.00	4.00	2.00
58	1.00	1.00	1.00	5.00	5.00
59	1.00	2.00	1.00	3.00	3.00
60	3.00	1.00	1.00	1.00	3.00
61	2.00	1.00	1.00	3.00	4.00
62	1.00	1.00	1.00	2.00	5.00
63	1.00	1.00	1.00	2.00	3.00
64	1.00	2.00	1.00	4.00	4.00
65	4.00	1.00	1.00	4.00	4.00
66	4.00	2.00	2.00	3.00	2.00
67	1.00	1.00	1.00	1.00	2.00
68	3.00	2.00	2.00	5.00	4.00
69	1.00	2.00	1.00	4.00	5.00
70	1.00	4.00	1.00	2.00	3.00
71	1.00	2.00	2.00	1.00	3.00
72	1.00	1.00	2.00	4.00	4.00
73	1.00	1.00	1.00	2.00	3.00
74	3.00	1.00	1.00	1.00	3.00
75	2.00	1.00	1.00	3.00	5.00
76	3.00	2.00	1.00	3.00	2.00

	sub081	sub082	sub083	sub084	sub085
77	1.00	1.00	1.00	2.00	2.00
78	1.00	1.00	1.00	3.00	3.00
79	2.00	2.00	1.00	2.00	3.00
80	1.00	1.00	1.00	1.00	3.00
81	2.00	2.00	1.00	4.00	4.00
82	2.00	1.00	1.00	5.00	2.00
83	2.00	2.00	1.00	5.00	3.00
84	1.00	1.00	1.00	2.00	1.00
85	3.00	1.00	1.00	4.00	2.00
86	4.00	1.00	2.00	5.00	5.00
87	3.00	4.00	2.00	5.00	5.00
88	2.00	2.00	1.00	3.00	3.00
89	3.00	3.00	2.00	1.00	2.00
90	3.00	1.00	2.00	1.00	6.00
91	1.00	1.00	1.00	1.00	2.00
92	2.00	1.00	1.00	2.00	2.00
93	1.00	2.00	1.00	4.00	2.00
94	2.00	1.00	1.00	1.00	3.00
95	1.00	1.00	1.00	3.00	2.00
96	2.00	2.00	1.00	4.00	3.00
97	2.00	1.00	1.00	3.00	4.00
98	3.00	1.00	1.00	5.00	2.00
99	2.00	2.00	1.00	2.00	3.00
100	1.00	1.00	1.00	1.00	3.00
101	1.00	2.00	1.00	2.00	2.00
102	4.00	2.00	1.00	3.00	4.00
103	5.00	1.00	2.00	2.00	2.00
104	2.00	1.00	1.00	4.00	2.00
105	1.00	1.00	1.00	1.00	5.00
106	1.00	1.00	1.00	1.00	3.00
107	1.00	1.00	2.00	6.00	2.00
108	2.00	3.00	2.00	4.00	2.00
109	1.00	2.00	1.00	1.00	3.00
110	1.00	2.00	1.00	1.00	6.00
111	1.00	1.00	1.00	2.00	2.00
112	3.00	1.00	1.00	2.00	3.00
113	5.00	2.00	1.00	1.00	2.00
114	1.00	1.00	1.00	3.00	2.00

	sub081	sub082	sub083	sub084	sub085
115	1.00	1.00	1.00	1.00	3.00
116	1.00	1.00	1.00	1.00	4.00
117	3.00	4.00	1.00	3.00	4.00
118	1.00	2.00	1.00	1.00	3.00
119	1.00	1.00	1.00	3.00	2.00
120	1.00	1.00	2.00	4.00	4.00
121	2.00	3.00	1.00	2.00	5.00
122	3.00	3.00	1.00	4.00	3.00
123	1.00	2.00	1.00	1.00	3.00
124	1.00	2.00	1.00	2.00	3.00
125	2.00	1.00	2.00	6.00	4.00
126	2.00	1.00	1.00	2.00	2.00
127	1.00	1.00	1.00	4.00	6.00
128	4.00	2.00	2.00	7.00	6.00
129	5.00	3.00	1.00	6.00	2.00
130	3.00	1.00	1.00	2.00	2.00
131	3.00	1.00	1.00	1.00	5.00
132	1.00	1.00	1.00	5.00	6.00
133	4.00	3.00	2.00	4.00	5.00
134	1.00	1.00	1.00	1.00	2.00
135	3.00	3.00	2.00	5.00	7.00
136	2.00	2.00	1.00	1.00	5.00
137	1.00	1.00	1.00	1.00	1.00
138	4.00	4.00	1.00	4.00	5.00
139	2.00	1.00	1.00	2.00	2.00
140	3.00	1.00	2.00	6.00	4.00
141	4.00	3.00	1.00	4.00	4.00
142	3.00	3.00	1.00	3.00	3.00
143	1.00	1.00	1.00	7.00	5.00
144	5.00	2.00	2.00	6.00	5.00
145	1.00	1.00	1.00	2.00	2.00
146	2.00	1.00	1.00	3.00	3.00
147	1.00	1.00	1.00	2.00	3.00
148	4.00	2.00	1.00	5.00	2.00
149	3.00	2.00	1.00	1.00	2.00
150	5.00	4.00	1.00	4.00	5.00
151	4.00	2.00	1.00	5.00	3.00
152	4.00	3.00	1.00	3.00	6.00

	sub081	sub082	sub083	sub084	sub085
153	4.00	3.00	1.00	2.00	5.00
154	3.00	2.00	2.00	7.00	7.00
155	2.00	1.00	1.00	3.00	2.00
156	2.00	1.00	1.00	3.00	3.00
157	3.00	1.00	1.00	4.00	3.00
158	3.00	1.00	1.00	1.00	5.00
159	5.00	2.00	1.00	6.00	6.00
160	3.00	2.00	1.00	3.00	4.00
161	2.00	1.00	1.00	2.00	2.00
162	4.00	3.00	1.00	6.00	6.00
163	3.00	3.00	2.00	4.00	2.00
164	5.00	2.00	3.00	4.00	5.00
165	4.00	2.00	1.00	3.00	3.00
166	3.00	1.00	1.00	1.00	3.00
167	3.00	3.00	1.00	7.00	4.00
168	1.00	1.00	1.00	3.00	3.00
169	1.00	1.00	1.00	2.00	3.00
170	2.00	1.00	1.00	5.00	2.00
171	2.00	2.00	2.00	4.00	5.00
172	2.00	1.00	1.00	6.00	1.00
173	3.00	1.00	1.00	1.00	2.00
174	2.00	1.00	1.00	4.00	2.00
175	2.00	1.00	1.00	3.00	2.00
176	2.00	1.00	1.00	1.00	3.00
177	3.00	2.00	1.00	2.00	4.00
178	3.00	2.00	3.00	7.00	5.00
179	3.00	2.00	1.00	6.00	4.00
180	3.00	1.00	1.00	2.00	3.00
181	1.00	2.00	1.00	1.00	3.00
182	1.00	1.00	1.00	3.00	3.00
183	2.00	1.00	1.00	4.00	4.00
184	1.00	1.00	1.00	2.00	3.00
185	1.00	1.00	1.00	1.00	4.00
186	1.00	1.00	1.00	3.00	2.00
187	2.00	1.00	1.00	1.00	2.00
188	2.00	4.00	2.00	6.00	6.00
189	2.00	1.00	1.00	5.00	4.00
190	4.00	2.00	2.00	7.00	5.00

	sub081	sub082	sub083	sub084	sub085
191	2.00	2.00	1.00	2.00	6.00
192	5.00	4.00	1.00	4.00	5.00
193	1.00	2.00	1.00	1.00	3.00
194	2.00	2.00	2.00	5.00	2.00
195	3.00	3.00	1.00	3.00	2.00
196	2.00	2.00	1.00	7.00	3.00
197	1.00	3.00	1.00	5.00	5.00
198	3.00	2.00	1.00	2.00	3.00
199	3.00	4.00	1.00	2.00	2.00
200	1.00	1.00	1.00	3.00	3.00
201	1.00	1.00	1.00	1.00	2.00
202	1.00	1.00	1.00	1.00	1.00
203	3.00	1.00	1.00	5.00	4.00
204	4.00	1.00	1.00	1.00	2.00
205	4.00	1.00	1.00	2.00	3.00
206	4.00	1.00	1.00	5.00	3.00
207	4.00	2.00	1.00	3.00	6.00
208	5.00	2.00	1.00	1.00	5.00
209	2.00	1.00	1.00	2.00	2.00

	var071	var073	var075	var077	var079
1	2.00	4.00	2.00	3.00	5.00
2	2.00	1.00	1.00	1.00	2.00
3	2.00	2.00	1.00	1.00	4.00
4	2.00	1.00	1.00	3.00	3.00
5	2.00	3.00	1.00	2.00	4.00
6	3.00	2.00	1.00	7.00	4.00
7	2.00	1.00	1.00	7.00	4.00
8	2.00	2.00	2.00	1.00	4.00
9	1.00	2.00	1.00	1.00	3.00
10	3.00	3.00	3.00	4.00	3.00
11	2.00	4.00	1.00	2.00	3.00
12	2.00	3.00	2.00	7.00	4.00
13	2.00	1.00	1.00	1.00	4.00
14	2.00	5.00	1.00	2.00	5.00
15	3.00	3.00	1.00	1.00	2.00
16	2.00	2.00	1.00	1.00	5.00
17	1.00	2.00	1.00	1.00	3.00
18	1.00	3.00	3.00	3.00	3.00
19	1.00	1.00	1.00	1.00	4.00
20	1.00	1.00	1.00	1.00	4.00
21	2.00	1.00	1.00	1.00	2.00
22	1.00	1.00	1.00	1.00	1.00
23	2.00	2.00	2.00	1.00	4.00
24	3.00	4.00	1.00	4.00	4.00
25	1.00	2.00	1.00	1.00	1.00
26	2.00	1.00	1.00	1.00	3.00
27	2.00	3.00	1.00	3.00	2.00
28	2.00	2.00	3.00	5.00	4.00
29	1.00	2.00	1.00	1.00	2.00
30	2.00	2.00	1.00	1.00	2.00
31	2.00	2.00	1.00	1.00	2.00
32	3.00	2.00	1.00	3.00	3.00
33	1.00	1.00	1.00	1.00	4.00
34	3.00	1.00	1.00	1.00	3.00
35	2.00	3.00	3.00	6.00	3.00
36	2.00	1.00	1.00	1.00	3.00
37	2.00	2.00	1.00	1.00	5.00
38	2.00	2.00	1.00	3.00	3.00

	var071	var073	var075	var077	var079
39	1.00	1.00	1.00	1.00	1.00
40	1.00	1.00	1.00	1.00	1.00
41	1.00	1.00	1.00	1.00	3.00
42	2.00	2.00	1.00	3.00	2.00
43	1.00	1.00	1.00	1.00	3.00
44	2.00	1.00	5.00	1.00	4.00
45	2.00	1.00	1.00	2.00	2.00
46	2.00	2.00	3.00	5.00	3.00
47	3.00	2.00	1.00	1.00	3.00
48	3.00	2.00	1.00	4.00	4.00
49	2.00	2.00	1.00	5.00	4.00
50	2.00	1.00	1.00	2.00	3.00
51	1.00	1.00	1.00	1.00	3.00
52	1.00	3.00	1.00	1.00	2.00
53	1.00	1.00	1.00	1.00	2.00
54	1.00	1.00	1.00	1.00	2.00
55	1.00	1.00	1.00	2.00	2.00
56	1.00	2.00	1.00	1.00	3.00
57	2.00	4.00	3.00	5.00	4.00
58	2.00	2.00	1.00	1.00	5.00
59	1.00	2.00	1.00	1.00	4.00
60	2.00	5.00	1.00	2.00	5.00
61	1.00	1.00	1.00	1.00	3.00
62	1.00	1.00	1.00	1.00	2.00
63	1.00	2.00	1.00	1.00	2.00
64	2.00	1.00	1.00	1.00	5.00
65	1.00	1.00	1.00	1.00	2.00
66	2.00	1.00	1.00	1.00	5.00
67	2.00	2.00	1.00	3.00	4.00
68	3.00	1.00	3.00	2.00	3.00
69	2.00	2.00	1.00	3.00	3.00
70	1.00	1.00	1.00	1.00	4.00
71	1.00	1.00	1.00	1.00	4.00
72	1.00	1.00	2.00	1.00	4.00
73	2.00	1.00	1.00	1.00	4.00
74	2.00	1.00	1.00	3.00	3.00
75	1.00	1.00	1.00	1.00	2.00
76	1.00	1.00	1.00	1.00	2.00

	var071	var073	var075	var077	var079
77	1.00	1.00	1.00	1.00	3.00
78	2.00	1.00	4.00	3.00	3.00
79	2.00	3.00	1.00	1.00	3.00
80	2.00	2.00	1.00	3.00	2.00
81	2.00	2.00	3.00	4.00	2.00
82	1.00	2.00	1.00	5.00	4.00
83	1.00	2.00	1.00	1.00	4.00
84	1.00	1.00	1.00	1.00	1.00
85	1.00	1.00	1.00	1.00	2.00
86	1.00	1.00	1.00	1.00	3.00
87	2.00	1.00	1.00	3.00	3.00
88	1.00	1.00	1.00	1.00	2.00
89	1.00	2.00	1.00	3.00	1.00
90	3.00	3.00	2.00	2.00	3.00
91	1.00	2.00	1.00	4.00	4.00
92	1.00	1.00	1.00	1.00	2.00
93	1.00	1.00	1.00	1.00	2.00
94	2.00	1.00	1.00	1.00	3.00
95	2.00	1.00	1.00	1.00	4.00
96	1.00	1.00	1.00	1.00	1.00
97	1.00	1.00	1.00	1.00	2.00
98	2.00	1.00	1.00	1.00	3.00
99	1.00	2.00	1.00	1.00	2.00
100	1.00	1.00	1.00	3.00	2.00
101	3.00	2.00	7.00	4.00	3.00
102	1.00	2.00	1.00	2.00	2.00
103	1.00	2.00	1.00	1.00	4.00
104	1.00	1.00	1.00	1.00	2.00
105	1.00	2.00	1.00	4.00	3.00
106	2.00	1.00	1.00	1.00	2.00
107	1.00	1.00	1.00	1.00	3.00
108	1.00	2.00	1.00	1.00	5.00
109	1.00	1.00	1.00	1.00	2.00
110	2.00	1.00	1.00	1.00	4.00
111	1.00	1.00	1.00	4.00	2.00
112	2.00	3.00	4.00	1.00	3.00
113	3.00	4.00	2.00	1.00	2.00
114	1.00	2.00	1.00	2.00	3.00

	var071	var073	var075	var077	var079
115	3.00	1.00	1.00	1.00	2.00
116	3.00	1.00	1.00	2.00	2.00
117	2.00	1.00	1.00	3.00	4.00
118	2.00	2.00	1.00	6.00	2.00
119	1.00	1.00	1.00	1.00	2.00
120	1.00	1.00	1.00	1.00	2.00
121	1.00	4.00	1.00	1.00	3.00
122	1.00	1.00	1.00	2.00	3.00
123	1.00	2.00	1.00	2.00	4.00
124	3.00	4.00	3.00	4.00	3.00
125	2.00	2.00	1.00	1.00	2.00
126	2.00	3.00	1.00	7.00	2.00
127	2.00	3.00	1.00	5.00	3.00
128	2.00	1.00	1.00	1.00	2.00
129	3.00	4.00	2.00	2.00	3.00
130	3.00	4.00	4.00	4.00	2.00
131	2.00	4.00	1.00	1.00	2.00
132	2.00	2.00	1.00	1.00	2.00
133	2.00	3.00	2.00	1.00	4.00
134	3.00	3.00	3.00	7.00	2.00
135	2.00	3.00	1.00	1.00	3.00
136	1.00	2.00	1.00	1.00	3.00
137	1.00	2.00	1.00	1.00	3.00
138	2.00	3.00	1.00	3.00	5.00
139	3.00	2.00	3.00	7.00	4.00
140	2.00	3.00	1.00	1.00	3.00
141	2.00	3.00	1.00	1.00	3.00
142	2.00	3.00	1.00	1.00	3.00
143	1.00	2.00	1.00	6.00	3.00
144	3.00	4.00	6.00	1.00	3.00
145	2.00	2.00	3.00	7.00	3.00
146	3.00	3.00	1.00	1.00	4.00
147	4.00	2.00	3.00	7.00	4.00
148	2.00	2.00	1.00	1.00	3.00
149	2.00	3.00	3.00	1.00	3.00
150	2.00	1.00	1.00	1.00	3.00
151	1.00	2.00	1.00	1.00	3.00
152	1.00	1.00	1.00	1.00	5.00

	var071	var073	var075	var077	var079
153	1.00	2.00	3.00	1.00	4.00
154	1.00	3.00	1.00	7.00	4.00
155	2.00	2.00	2.00	4.00	4.00
156	2.00	2.00	1.00	1.00	2.00
157	2.00	2.00	1.00	1.00	4.00
158	2.00	2.00	1.00	1.00	3.00
159	3.00	3.00	4.00	7.00	2.00
160	2.00	3.00	1.00	1.00	5.00
161	4.00	3.00	1.00	6.00	4.00
162	2.00	3.00	2.00	1.00	4.00
163	4.00	3.00	3.00	6.00	5.00
164	3.00	2.00	1.00	1.00	5.00
165	2.00	2.00	1.00	1.00	3.00
166	2.00	1.00	1.00	1.00	4.00
167	2.00	3.00	1.00	1.00	3.00
168	2.00	1.00	1.00	1.00	3.00
169	2.00	3.00	2.00	3.00	4.00
170	1.00	2.00	1.00	1.00	4.00
171	2.00	2.00	1.00	2.00	4.00
172	2.00	3.00	1.00	1.00	3.00
173	2.00	2.00	2.00	4.00	1.00
174	2.00	2.00	2.00	3.00	1.00
175	2.00	2.00	1.00	1.00	1.00
176	3.00	2.00	3.00	7.00	1.00
177	2.00	1.00	1.00	1.00	2.00
178	2.00	5.00	1.00	6.00	2.00
179	2.00	5.00	1.00	2.00	3.00
180	2.00	3.00	1.00	2.00	3.00
181	1.00	1.00	1.00	1.00	3.00
182	3.00	2.00	7.00	3.00	3.00
183	3.00	3.00	4.00	6.00	2.00
184	1.00	2.00	2.00	2.00	2.00
185	1.00	5.00	1.00	4.00	5.00
186	1.00	1.00	1.00	1.00	1.00
187	3.00	6.00	3.00	5.00	3.00
188	2.00	1.00	1.00	1.00	2.00
189	2.00	1.00	1.00	1.00	2.00
190	2.00	1.00	1.00	1.00	5.00

	var071	var073	var075	var077	var079
191	2.00	1.00	1.00	1.00	5.00
192	1.00	2.00	1.00	1.00	5.00
193	1.00	1.00	1.00	1.00	5.00
194	2.00	4.00	2.00	6.00	4.00
195	3.00	3.00	1.00	3.00	3.00
196	2.00	2.00	1.00	1.00	2.00
197	2.00	3.00	1.00	1.00	3.00
198	1.00	1.00	1.00	1.00	4.00
199	3.00	3.00	2.00	1.00	3.00
200	2.00	3.00	1.00	1.00	2.00
201	2.00	1.00	3.00	3.00	5.00
202	2.00	1.00	1.00	1.00	4.00
203	1.00	1.00	2.00	1.00	3.00
204	2.00	1.00	1.00	1.00	3.00
205	2.00	2.00	1.00	1.00	2.00
206	1.00	1.00	1.00	3.00	2.00
207	1.00	1.00	1.00	1.00	2.00
208	3.00	4.00	1.00	2.00	3.00
209	2.00	3.00	5.00	3.00	2.00

	case_lbl	var009	var010	var011	var012	var013
1	VAR1	2.00	5.00	3.00	2.00	2.00
2	VAR10	2.00	1.00	5.00	1.00	1.00
3	VAR100	3.00	1.00	5.00	1.00	1.00
4	VAR101	2.00	3.00	6.00	1.00	1.00
5	VAR102	4.00	4.00	5.00	1.00	1.00
6	VAR103	4.00	3.00	7.00	2.00	1.00
7	VAR104	2.00	1.00	6.00	1.00	1.00
8	VAR105	4.00	2.00	4.00	2.00	5.00
9	VAR106	1.00	2.00	3.00	1.00	1.00
10	VAR107	4.00	1.00	2.00	1.00	3.00
11	VAR108	2.00	1.00	4.00	1.00	1.00
12	VAR109	4.00	1.00	2.00	1.00	3.00
13	VAR11	1.00	1.00	6.00	1.00	1.00
14	VAR110	1.00	4.00	1.00	1.00	4.00
15	VAR111	1.00	1.00	2.00	1.00	2.00
16	VAR112	2.00	1.00	2.00	1.00	1.00
17	VAR113	1.00	1.00	1.00	1.00	1.00
18	VAR114	4.00	1.00	5.00	2.00	3.00
19	VAR115	2.00	2.00	4.00	2.00	2.00
20	VAR116	2.00	1.00	5.00	1.00	1.00
21	VAR117	2.00	1.00	2.00	1.00	1.00
22	VAR118	1.00	1.00	5.00	1.00	1.00
23	VAR119	3.00	1.00	1.00	1.00	4.00
24	VAR12	6.00	1.00	4.00	2.00	3.00
25	VAR120	1.00	1.00	6.00	2.00	1.00
26	VAR121	1.00	1.00	3.00	1.00	1.00
27	VAR122	2.00	2.00	3.00	1.00	1.00
28	VAR123	1.00	1.00	1.00	1.00	1.00
29	VAR124	3.00	1.00	1.00	2.00	1.00
30	VAR125	4.00	4.00	5.00	1.00	1.00
31	VAR126	1.00	1.00	3.00	1.00	2.00
32	VAR127	4.00	1.00	7.00	1.00	1.00
33	VAR128	3.00	2.00	5.00	1.00	1.00
34	VAR129	2.00	2.00	2.00	1.00	3.00
35	VAR13	3.00	1.00	3.00	2.00	2.00
36	VAR130	1.00	1.00	1.00	1.00	1.00
37	VAR131	4.00	1.00	5.00	1.00	1.00
38	VAR132	1.00	1.00	2.00	2.00	1.00

	case_lbl	var009	var010	var011	var012	var013
39	VAR133	1.00	1.00	1.00	1.00	1.00
40	VAR134	1.00	1.00	4.00	1.00	1.00
41	VAR135	2.00	2.00	1.00	1.00	1.00
42	VAR136	3.00	3.00	3.00	1.00	2.00
43	VAR137	2.00	1.00	7.00	1.00	1.00
44	VAR138	5.00	7.00	6.00	1.00	1.00
45	VAR139	4.00	1.00	6.00	1.00	1.00
46	VAR14	2.00	2.00	2.00	1.00	2.00
47	VAR140	2.00	1.00	5.00	2.00	1.00
48	VAR141	4.00	1.00	3.00	1.00	3.00
49	VAR142	5.00	5.00	4.00	1.00	5.00
50	VAR143	1.00	1.00	5.00	2.00	1.00
51	VAR144	1.00	1.00	1.00	1.00	1.00
52	VAR145	2.00	6.00	4.00	1.00	3.00
53	VAR146	1.00	1.00	2.00	1.00	1.00
54	VAR147	1.00	1.00	3.00	1.00	1.00
55	VAR148	1.00	1.00	2.00	1.00	1.00
56	VAR149	2.00	1.00	3.00	2.00	1.00
57	VAR15	1.00	1.00	1.00	1.00	2.00
58	VAR150	3.00	3.00	4.00	1.00	1.00
59	VAR151	1.00	2.00	5.00	1.00	1.00
60	VAR152	2.00	2.00	6.00	1.00	4.00
61	VAR153	2.00	2.00	7.00	1.00	1.00
62	VAR154	1.00	1.00	7.00	1.00	1.00
63	VAR155	1.00	1.00	5.00	1.00	1.00
64	VAR156	4.00	2.00	3.00	2.00	2.00
65	VAR157	4.00	1.00	4.00	1.00	1.00
66	VAR158	3.00	1.00	5.00	1.00	1.00
67	VAR159	2.00	1.00	4.00	1.00	1.00
68	VAR16	2.00	1.00	3.00	1.00	2.00
69	VAR160	4.00	1.00	2.00	2.00	3.00
70	VAR161	3.00	1.00	5.00	1.00	1.00
71	VAR162	1.00	1.00	3.00	1.00	1.00
72	VAR163	3.00	1.00	6.00	3.00	1.00
73	VAR164	2.00	1.00	5.00	1.00	3.00
74	VAR165	5.00	4.00	4.00	2.00	1.00
75	VAR166	1.00	3.00	6.00	1.00	1.00
76	VAR167	3.00	2.00	5.00	1.00	1.00

	case_lbl	var009	var010	var011	var012	var013
77	VAR168	1.00	1.00	5.00	2.00	1.00
78	VAR169	1.00	4.00	7.00	3.00	1.00
79	VAR17	1.00	1.00	4.00	1.00	2.00
80	VAR170	4.00	2.00	4.00	2.00	1.00
81	VAR171	5.00	1.00	7.00	4.00	4.00
82	VAR172	4.00	3.00	6.00	1.00	4.00
83	VAR173	1.00	2.00	6.00	1.00	1.00
84	VAR174	1.00	2.00	5.00	1.00	1.00
85	VAR175	2.00	2.00	3.00	1.00	1.00
86	VAR176	2.00	2.00	5.00	1.00	1.00
87	VAR177	2.00	2.00	7.00	1.00	1.00
88	VAR178	1.00	1.00	5.00	1.00	1.00
89	VAR179	2.00	2.00	6.00	1.00	1.00
90	VAR18	1.00	1.00	6.00	1.00	2.00
91	VAR180	1.00	1.00	6.00	1.00	1.00
92	VAR181	2.00	2.00	7.00	1.00	1.00
93	VAR182	1.00	1.00	2.00	1.00	1.00
94	VAR183	4.00	2.00	1.00	1.00	1.00
95	VAR184	2.00	1.00	2.00	5.00	1.00
96	VAR185	3.00	1.00	4.00	2.00	1.00
97	VAR186	2.00	1.00	3.00	1.00	3.00
98	VAR187	3.00	1.00	5.00	1.00	1.00
99	VAR188	2.00	1.00	4.00	1.00	1.00
100	VAR189	3.00	2.00	6.00	1.00	1.00
101	VAR19	2.00	3.00	2.00	1.00	1.00
102	VAR190	2.00	1.00	7.00	2.00	1.00
103	VAR191	4.00	1.00	4.00	1.00	1.00
104	VAR192	1.00	1.00	3.00	1.00	1.00
105	VAR193	3.00	3.00	3.00	1.00	2.00
106	VAR194	1.00	1.00	1.00	2.00	2.00
107	VAR195	1.00	1.00	2.00	1.00	1.00
108	VAR196	2.00	1.00	5.00	1.00	3.00
109	VAR197	2.00	1.00	4.00	1.00	2.00
110	VAR198	2.00	2.00	6.00	2.00	2.00
111	VAR199	1.00	1.00	3.00	1.00	1.00
112	VAR2	1.00	3.00	3.00	1.00	1.00
113	VAR20	4.00	2.00	1.00	2.00	1.00
114	VAR200	2.00	1.00	2.00	1.00	1.00

	case_lbl	var009	var010	var011	var012	var013
115	VAR201	2.00	5.00	4.00	1.00	1.00
116	VAR202	2.00	6.00	5.00	1.00	1.00
117	VAR203	4.00	6.00	5.00	1.00	1.00
118	VAR204	5.00	3.00	4.00	2.00	1.00
119	VAR205	1.00	1.00	2.00	1.00	1.00
120	VAR206	1.00	1.00	1.00	1.00	1.00
121	VAR207	3.00	6.00	6.00	2.00	1.00
122	VAR208	2.00	1.00	4.00	1.00	1.00
123	VAR209	2.00	2.00	4.00	2.00	1.00
124	VAR21	7.00	5.00	7.00	3.00	5.00
125	VAR22	3.00	3.00	5.00	1.00	3.00
126	VAR23	4.00	2.00	6.00	3.00	3.00
127	VAR24	4.00	3.00	6.00	1.00	1.00
128	VAR25	4.00	1.00	4.00	1.00	1.00
129	VAR26	3.00	3.00	3.00	2.00	1.00
130	VAR27	3.00	4.00	5.00	1.00	1.00
131	VAR28	5.00	2.00	1.00	1.00	1.00
132	VAR29	2.00	1.00	1.00	1.00	1.00
133	VAR3	3.00	2.00	1.00	1.00	1.00
134	VAR30	5.00	3.00	5.00	2.00	3.00
135	VAR31	3.00	2.00	5.00	1.00	1.00
136	VAR32	4.00	1.00	6.00	1.00	2.00
137	VAR33	1.00	1.00	1.00	1.00	1.00
138	VAR34	4.00	3.00	5.00	4.00	1.00
139	VAR35	4.00	2.00	7.00	1.00	3.00
140	VAR36	2.00	2.00	6.00	1.00	1.00
141	VAR37	3.00	1.00	6.00	1.00	1.00
142	VAR38	3.00	3.00	4.00	1.00	1.00
143	VAR39	3.00	2.00	3.00	1.00	1.00
144	VAR4	4.00	1.00	5.00	2.00	2.00
145	VAR40	5.00	2.00	2.00	1.00	4.00
146	VAR41	6.00	1.00	6.00	1.00	2.00
147	VAR42	2.00	6.00	5.00	1.00	4.00
148	VAR43	1.00	1.00	1.00	1.00	1.00
149	VAR44	2.00	4.00	3.00	1.00	1.00
150	VAR45	1.00	2.00	1.00	1.00	1.00
151	VAR46	1.00	1.00	5.00	1.00	1.00
152	VAR47	2.00	2.00	3.00	1.00	1.00

	case_lbl	var009	var010	var011	var012	var013
153	VAR48	1.00	2.00	1.00	1.00	1.00
154	VAR49	2.00	1.00	4.00	1.00	3.00
155	VAR5	1.00	1.00	1.00	1.00	2.00
156	VAR50	3.00	1.00	2.00	1.00	3.00
157	VAR51	1.00	1.00	3.00	1.00	3.00
158	VAR52	1.00	1.00	2.00	2.00	3.00
159	VAR53	5.00	6.00	7.00	3.00	2.00
160	VAR54	1.00	2.00	5.00	1.00	1.00
161	VAR55	4.00	4.00	5.00	1.00	3.00
162	VAR56	6.00	4.00	6.00	1.00	1.00
163	VAR57	6.00	4.00	7.00	2.00	3.00
164	VAR58	4.00	1.00	5.00	1.00	1.00
165	VAR59	2.00	1.00	4.00	1.00	1.00
166	VAR6	1.00	1.00	1.00	5.00	1.00
167	VAR60	3.00	5.00	6.00	1.00	3.00
168	VAR61	1.00	4.00	3.00	1.00	1.00
169	VAR62	1.00	1.00	1.00	1.00	3.00
170	VAR63	1.00	1.00	1.00	1.00	1.00
171	VAR64	2.00	3.00	3.00	1.00	1.00
172	VAR65	3.00	2.00	6.00	1.00	1.00
173	VAR66	1.00	2.00	6.00	1.00	2.00
174	VAR67	1.00	2.00	5.00	1.00	2.00
175	VAR68	1.00	1.00	2.00	1.00	1.00
176	VAR69	4.00	1.00	3.00	1.00	2.00
177	VAR7	2.00	1.00	2.00	1.00	1.00
178	VAR70	1.00	1.00	7.00	5.00	1.00
179	VAR71	1.00	7.00	7.00	1.00	1.00
180	VAR72	2.00	1.00	6.00	1.00	2.00
181	VAR73	1.00	1.00	5.00	1.00	1.00
182	VAR74	1.00	1.00	7.00	1.00	1.00
183	VAR75	1.00	6.00	6.00	1.00	1.00
184	VAR76	2.00	1.00	7.00	1.00	2.00
185	VAR77	6.00	5.00	7.00	4.00	4.00
186	VAR78	1.00	1.00	1.00	1.00	1.00
187	VAR79	6.00	4.00	6.00	2.00	3.00
188	VAR8	4.00	2.00	6.00	1.00	1.00
189	VAR80	2.00	1.00	5.00	1.00	1.00
190	VAR81	4.00	1.00	4.00	1.00	1.00

	case_lbl	var009	var010	var011	var012	var013
191	VAR82	3.00	4.00	6.00	3.00	1.00
192	VAR83	2.00	1.00	7.00	1.00	1.00
193	VAR84	1.00	1.00	4.00	1.00	1.00
194	VAR85	4.00	1.00	3.00	1.00	2.00
195	VAR86	5.00	6.00	6.00	1.00	5.00
196	VAR87	2.00	1.00	2.00	1.00	1.00
197	VAR88	4.00	1.00	1.00	1.00	2.00
198	VAR89	1.00	1.00	5.00	1.00	1.00
199	VAR9	5.00	2.00	5.00	5.00	2.00
200	VAR90	1.00	1.00	5.00	1.00	1.00
201	VAR91	2.00	4.00	4.00	1.00	1.00
202	VAR92	1.00	1.00	6.00	2.00	3.00
203	VAR93	3.00	3.00	4.00	1.00	1.00
204	VAR94	1.00	1.00	1.00	1.00	1.00
205	VAR95	3.00	1.00	1.00	1.00	3.00
206	VAR96	2.00	1.00	3.00	1.00	1.00
207	VAR97	1.00	4.00	5.00	1.00	1.00
208	VAR98	4.00	1.00	3.00	1.00	1.00
209	VAR99	1.00	1.00	2.00	1.00	2.00

U.S. Department of Justice
 National Crime Information Service (NCIRS)