Cognitive ability, character skills, and learning to play equilibrium: A level-k analysis

Supplementary Web Appendix (Intended for online publication)

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1 Experimental instructions

Please look at your screen now. I am reading from the instructions displayed on your screen. Please now turn off cell phones and any other electronic devices. These must remain turned off for the duration of this session. Please do not use or place on your desk any personal items, including pens, paper, phones etc. Please do not look into anyone else's booth at any time. Thank you for participating in this experimental session on economic decision-making. You were randomly selected from the Economic Science Laboratory's pool of subjects to be invited to participate in this session. There will be a number of pauses for you to ask questions. During such a pause, please raise your hand if you want to ask a question. Apart from asking questions in this way, you must not communicate with anybody in this room or make any noise.

You will be paid a show-up fee of $5 together with any money you accumulate during this session. The amount of money you accumulate will depend partly on your actions and partly on the actions of other participants. You will be paid privately in cash at the end of the session.

{*Further instructions in the 15 sessions in January 2014 that included questionnaires to measure character skills:* Please raise your hand if you have any questions. Before we start the experimental session, I would like you to complete a pre-experimental survey. The survey is made up of 68 questions. There are 17 pages with 4 questions on each page. For each question, please enter your answer in the column to the right of the question. There are no right or wrong answers to the questions. You will have 8 minutes to complete the pre-experimental survey. During the 8 minutes, you can move back and forth between the 17 pages and you can change your previous answers. The top right-hand corner of the screen will display the time remaining (in seconds). Before we start the pre-experimental survey, please raise your hand if you have any questions. During the pre-experimental survey, please raise your hand if you have a problem with your computer. [Subjects complete questionnaire] Thank you for completing the pre-experimental survey. I will now describe the experimental session.}

The session is made up of 2 parts. In the first part you will complete a test. Right at the end of the session you will find out your own test score, but you will not be paid for completing the test. I will describe the second part of the session after you have completed the test. Please raise your hand if you have any questions.

I will now describe the test which makes up the first part of the session. The test is made up of 60 questions, divided into parts A, B, C, D and E. Each of these parts is made up of 12 questions. For every question, there is a pattern with a piece missing and a number of pieces below the pattern. You have to choose which of the pieces below is the right one to complete the pattern. For parts A and B of the test, you will see 6 pieces that might complete the pattern. For parts C, D and E you will see 8 pieces that might complete the pattern. In every case, one and only one of these pieces is the right one to complete the pattern.[1] For each question, please enter your answer in the column to the right of the pattern. You will score 1 point for every right answer. You will not be penalized for wrong answers. You will have 3 minutes to complete each of parts A and B, and you will have 8 minutes to complete each of parts C, D, and E. During each part, you can move back and forth between the 12 questions in that part and you can change your previous answers. The top right-hand corner of the screen will display

[1] The wording of this description follows the standard Raven test convention.

the time remaining (in seconds). Before we start the test, please raise your hand if you have any questions. During the test, please raise your hand if you have a problem with your computer. [Subjects complete test]

Your screen is now displaying whether your test score was in the top half of the test scores of all participants in the room or was in the bottom half of the test scores of all participants. [30 second pause] [Example (not read aloud): Your test score was in the top half of the test scores of all participants in the room.] At the end of the session you will find out your own test score.

I will now describe the second and final part of the session. This second part is made up of 10 rounds. You will be anonymously matched into groups of 3 participants. You will stay in the same group for all 10 rounds. In each round, you and your other 2 group members will separately choose a whole number between 0 and 100 (0, 100 or any whole number in between is allowed). The group member whose chosen number is closest to 70% of the average of all 3 chosen numbers will be paid $6 for that round and the other 2 group members will be paid nothing. If more than one group member chooses a number which is closest to 70% of the average of all 3 chosen numbers, the $6 will be split equally among the group members who chose the closest number or numbers. Your total payment will be the sum of your payments in each round together with your show-up fee of $5. In each round you will have 90 seconds to choose your number. If you choose your number early you will still have to wait until the end of the 90 seconds. The top right-hand corner of the screen will display the time remaining (in seconds). The screen will also include a reminder of the rules.

At the end of each round you will discover: (i) the numbers chosen by all your group members; (ii) the average of all 3 chosen numbers; (iii) what 70% of the average of all 3 chosen numbers was; and (iv) how much each group member will be paid for the round. Please raise your hand if you have any questions.

You will stay in the same group of 3 for all 10 rounds. Each group member has been randomly allocated a label, X, Y or Z. Your screen is now displaying your label and whether the test scores of the members of your group were in the top half or the bottom half of the test scores of all participants in the room. [60 second pause] [Example (not read aloud): You are group member Y. Your test score was in the top half of the test scores of all participants in the room. You have been matched with 2 participants (group member X and group member Z). Group member X was randomly selected from those whose test scores were also in the top half. Group member Z was randomly selected from those whose test scores were in the bottom half.] Please raise your hand if you have any questions. There will be no further opportunities for questions.

[10 rounds of beauty contest with feedback as described in Section 2.3]

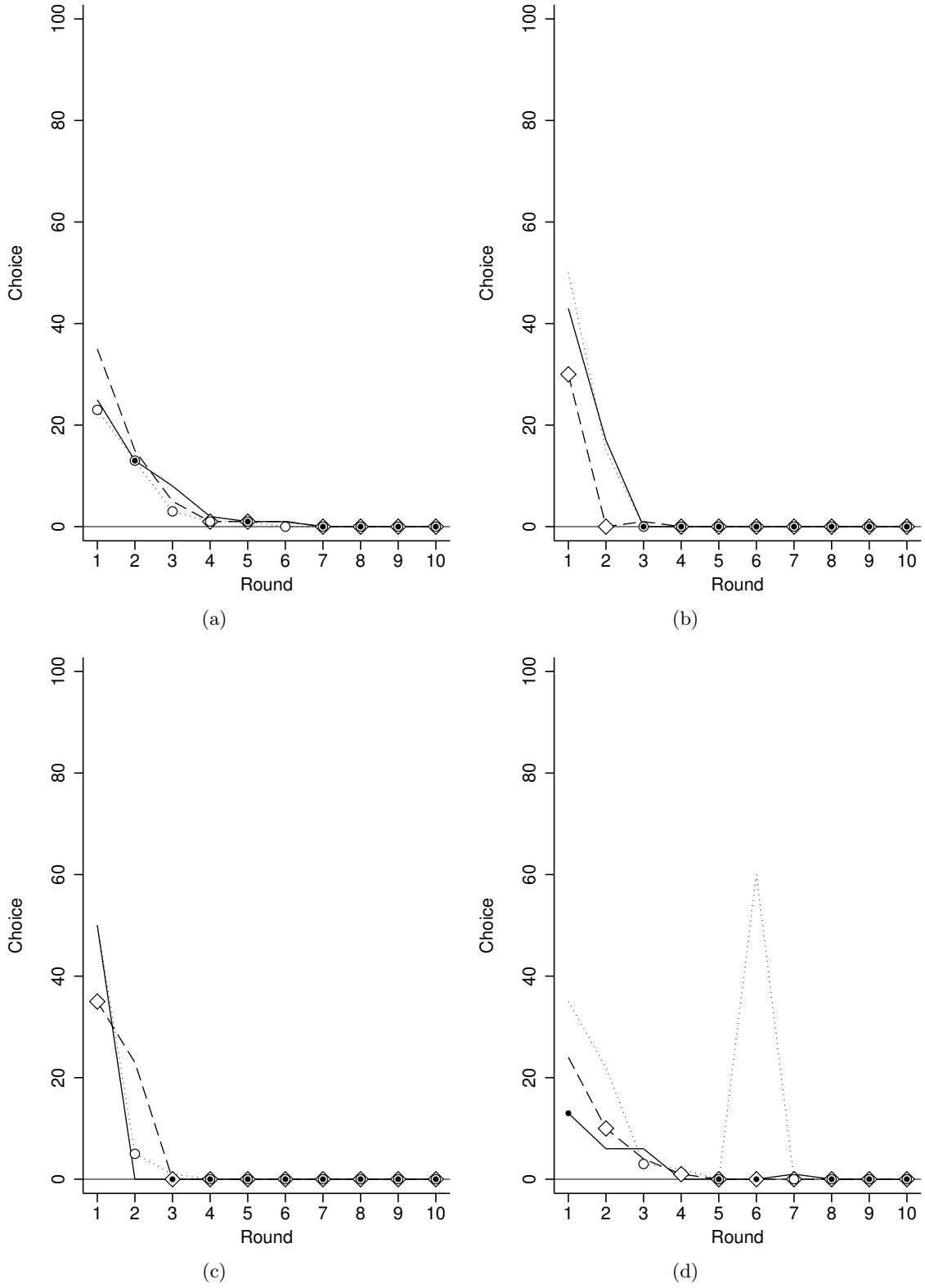
[Screen asks subjects to report their gender]

[Screen reports the subject's score in the Raven test]

The session has now finished. Your total cash payment, including the show-up fee, is displayed on your screen. Please remain in your seat until you have been paid. Thank-you for participating.

2 Visual description of group-by-group behavior for all groups

The figures below illustrate, for each of the 260 groups, the number chosen each round by each group member. The figures also show the winning choice or choices in each round. The group plots are ordered first by the number of high ability subjects in the group, and then by the average choice of the group members over the 10 rounds (running from low to high).



Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 1: Group-by-group behavior: own-matched high ability groups.

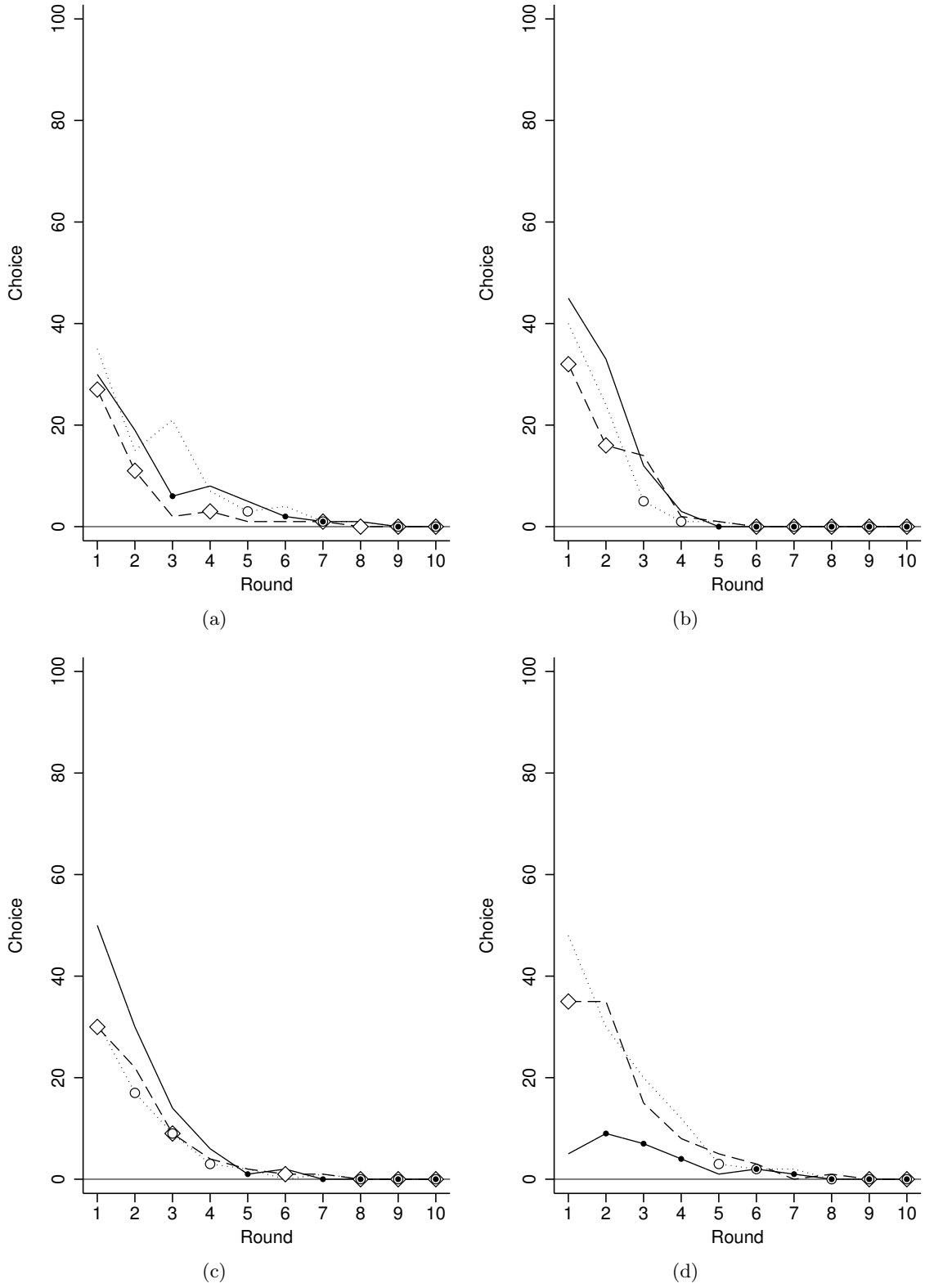


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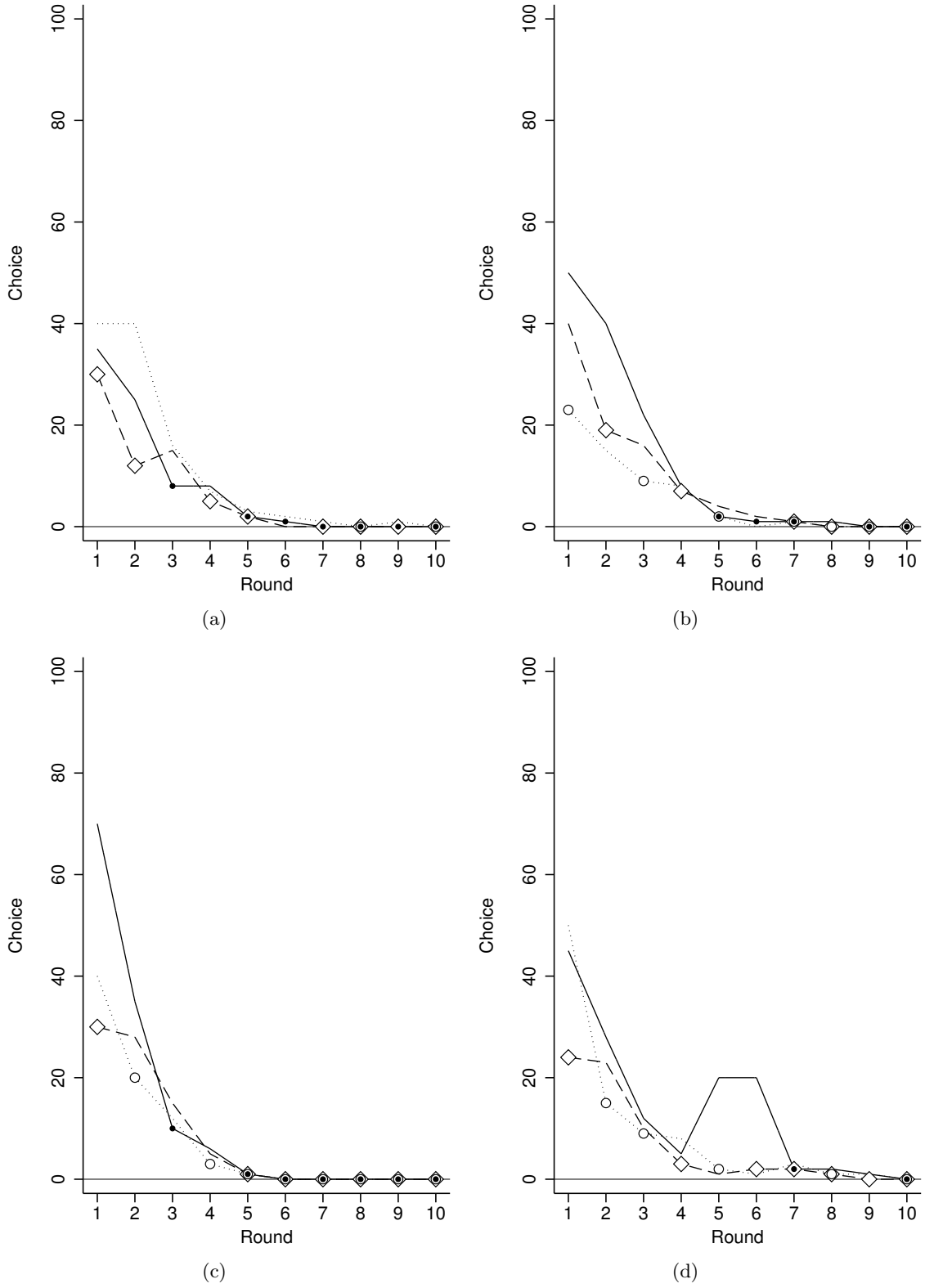
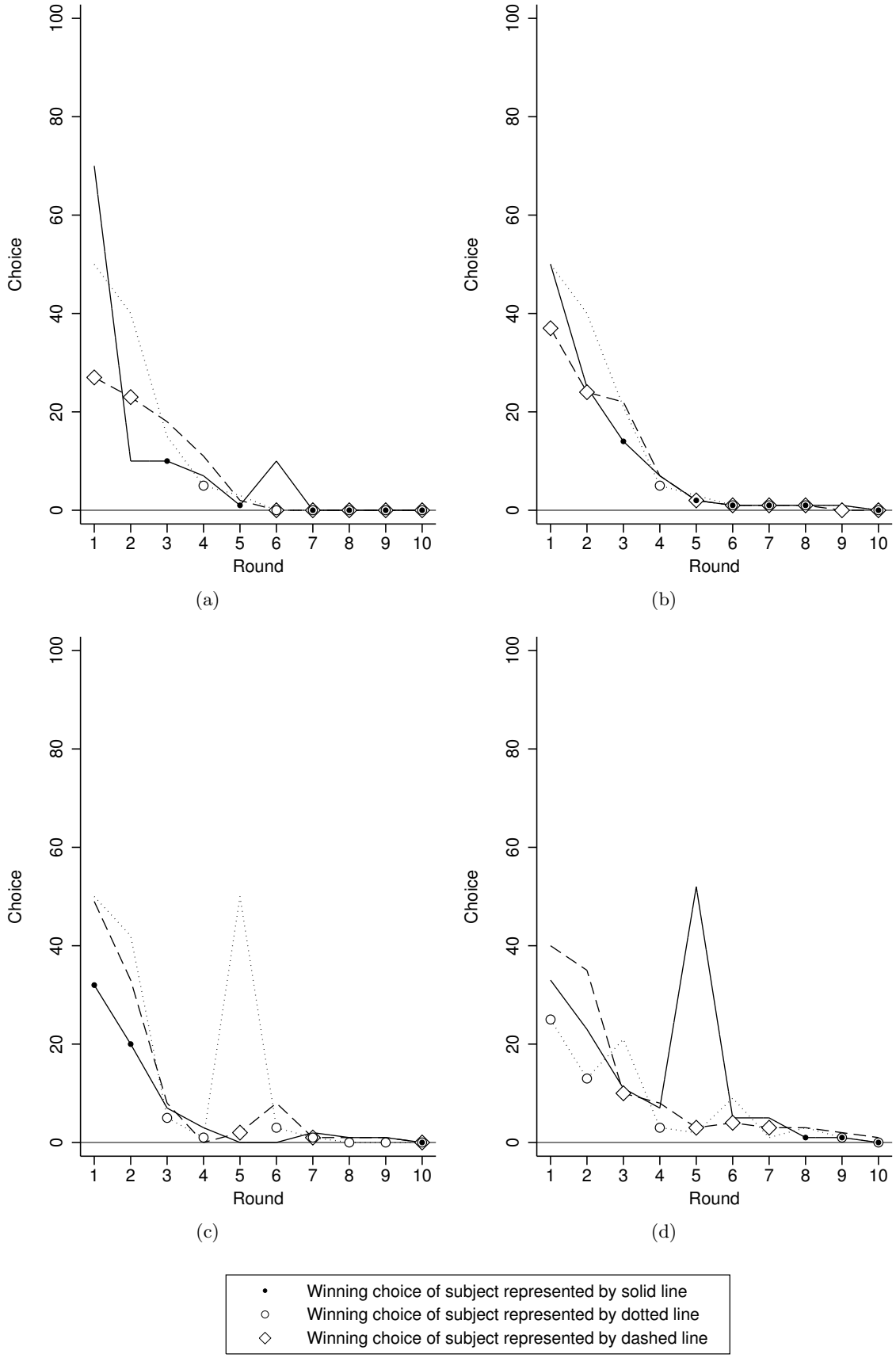
Figure 2: Group-by-group behavior: own-matched high ability groups.



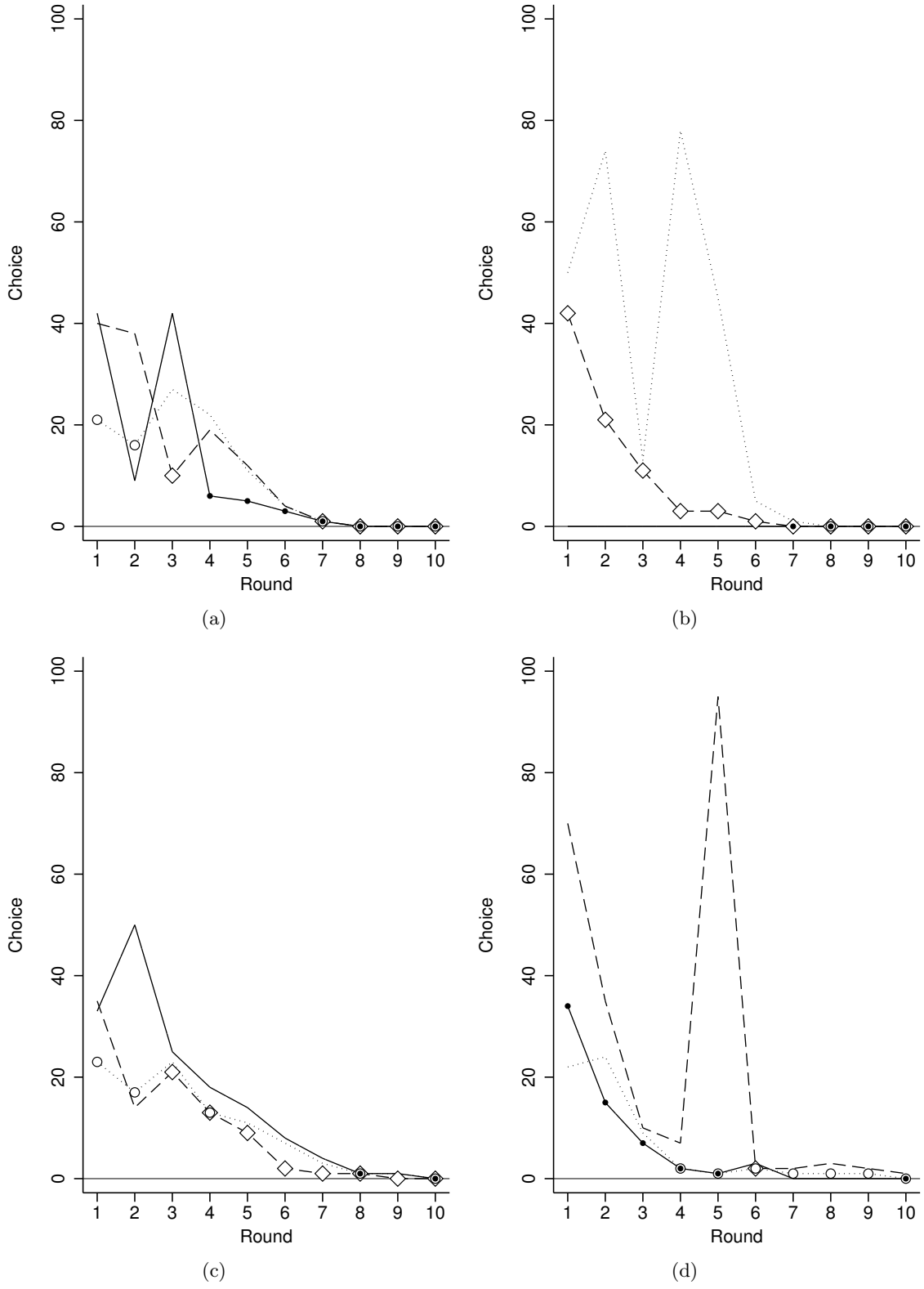
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 3: Group-by-group behavior: own-matched high ability groups.



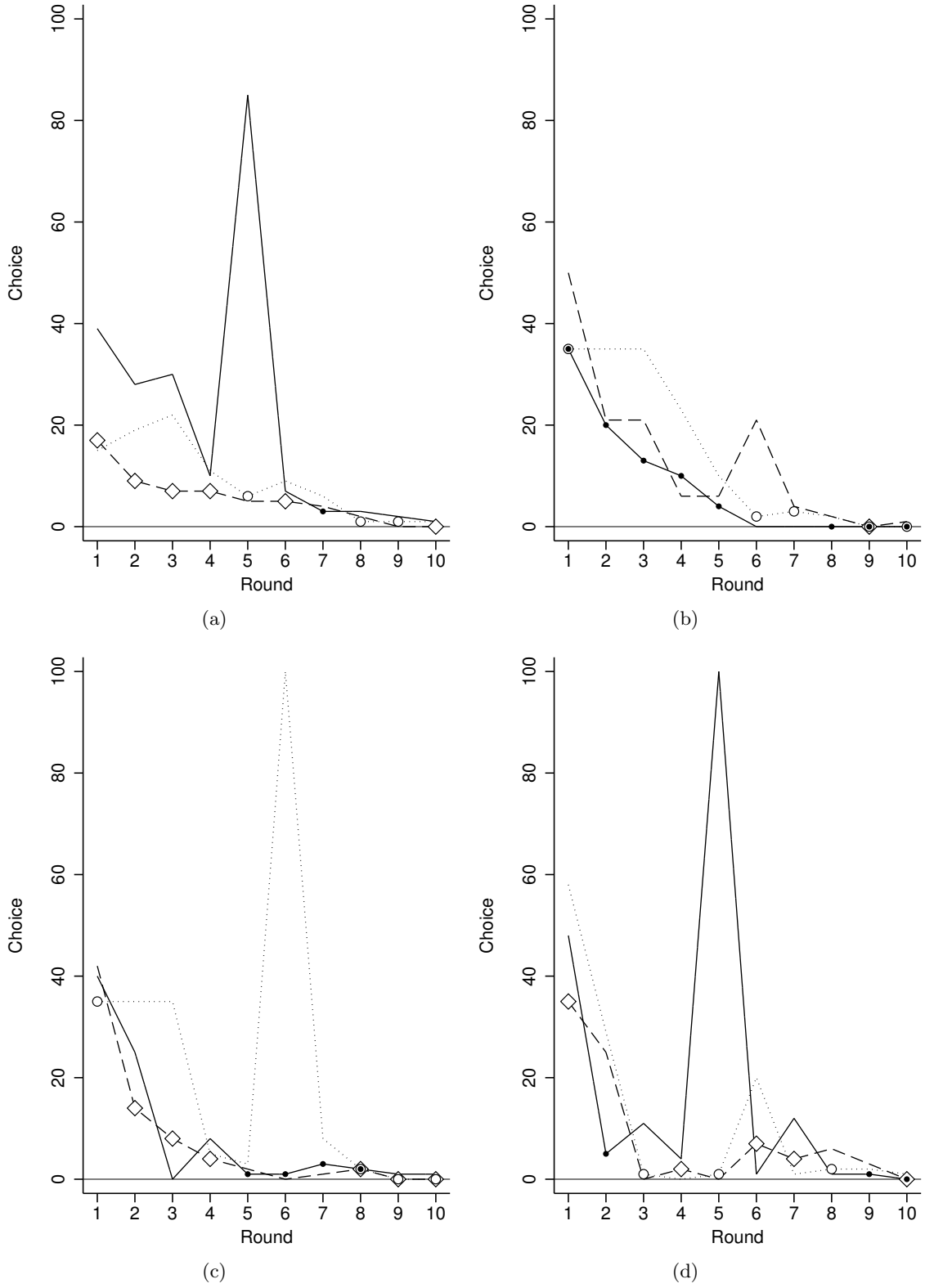
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 4: Group-by-group behavior: own-matched high ability groups.



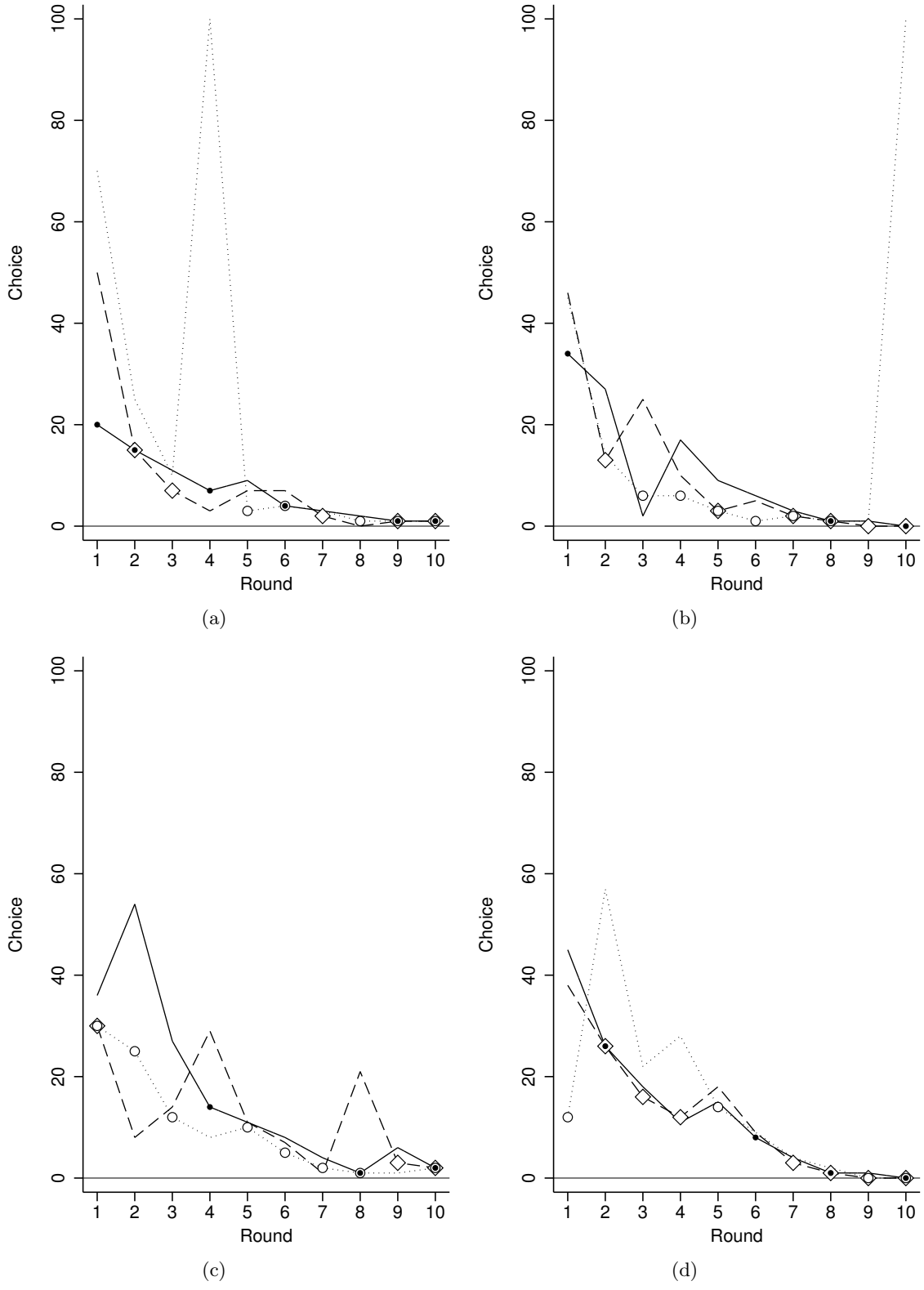
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 5: Group-by-group behavior: own-matched high ability groups.



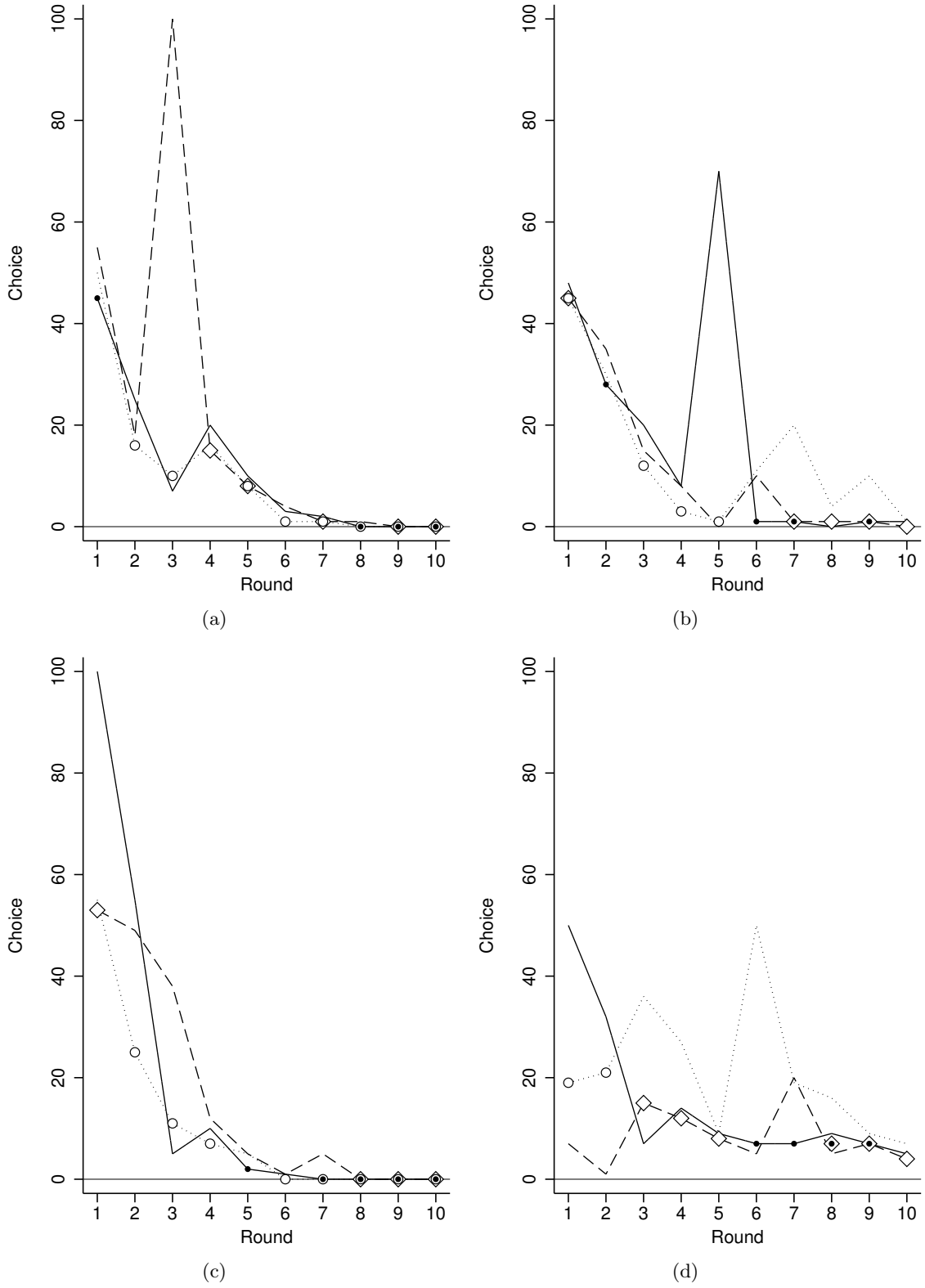
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 6: Group-by-group behavior: own-matched high ability groups.



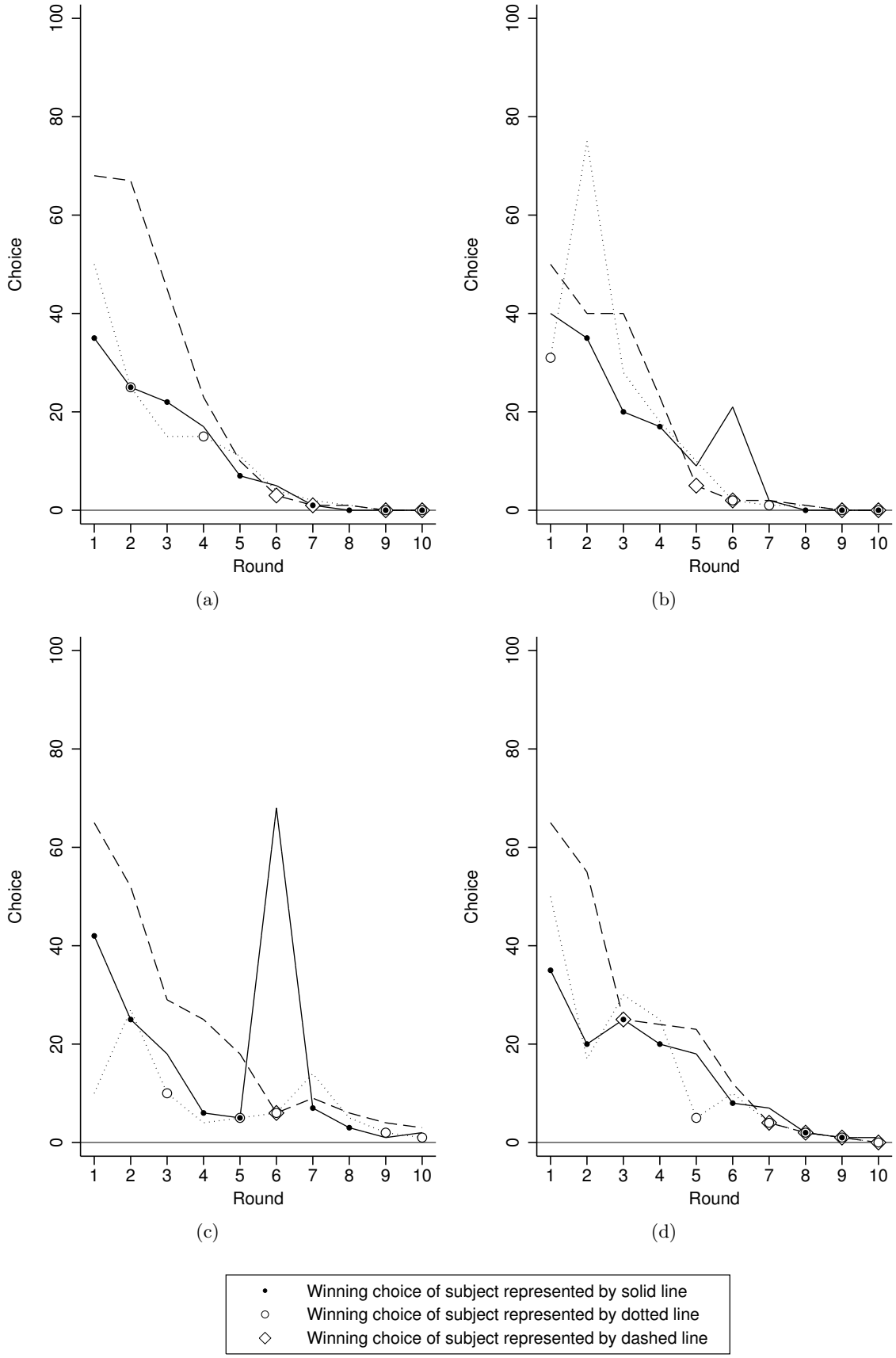
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 7: Group-by-group behavior: own-matched high ability groups.



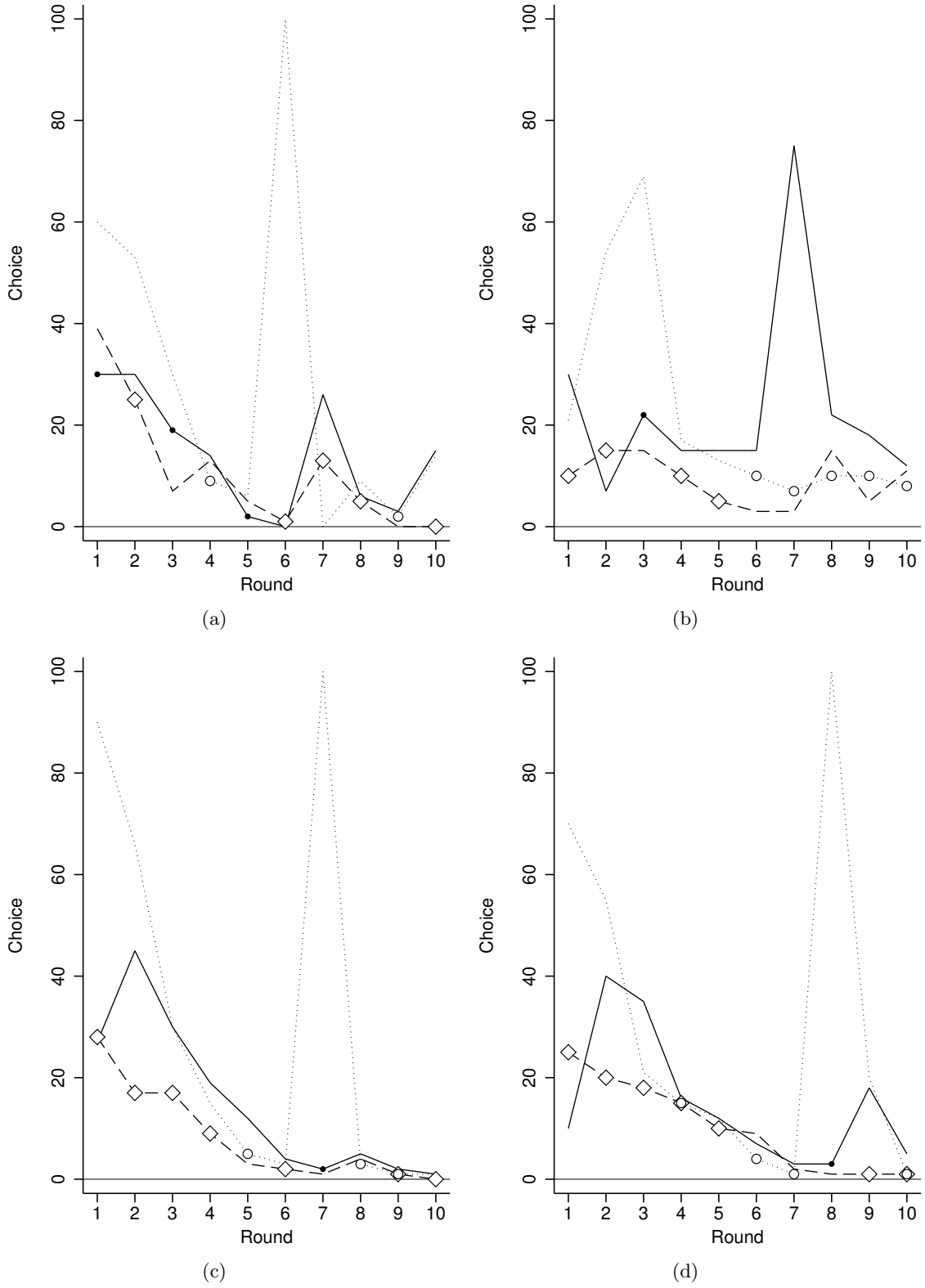
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 8: Group-by-group behavior: own-matched high ability groups.



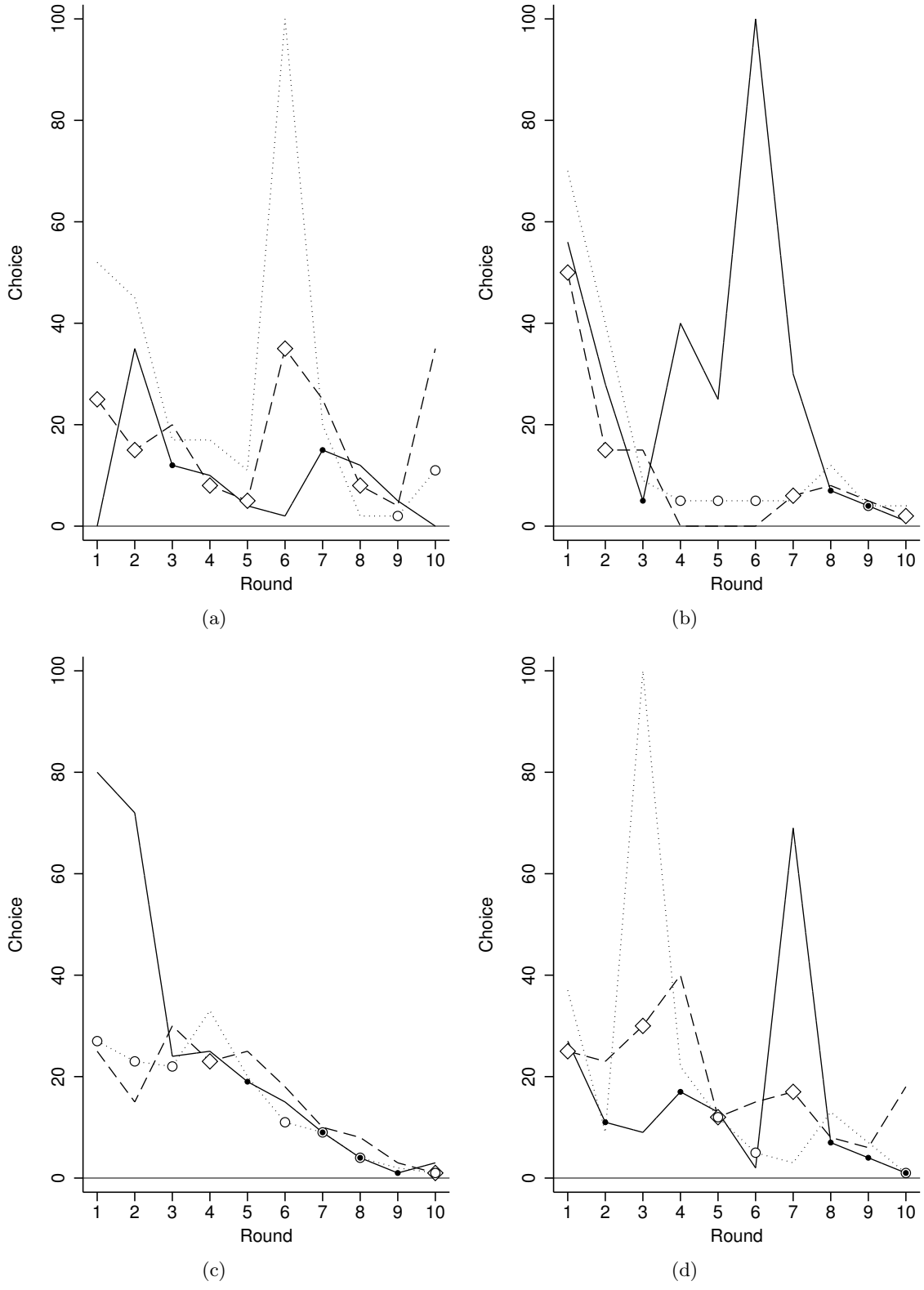
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 9: Group-by-group behavior: own-matched high ability groups.



Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 10: Group-by-group behavior: own-matched high ability groups.



Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 11: Group-by-group behavior: own-matched high ability groups.

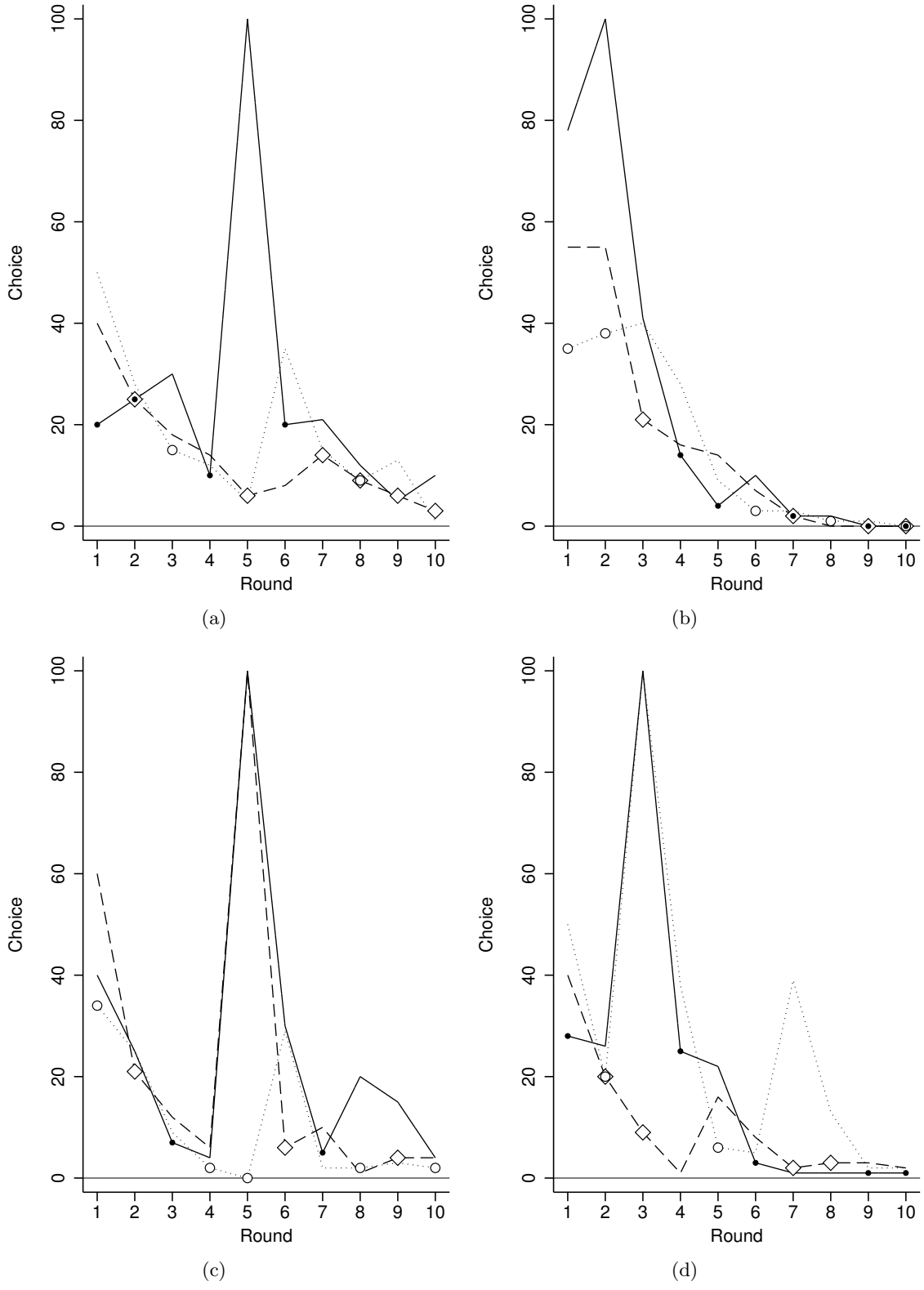


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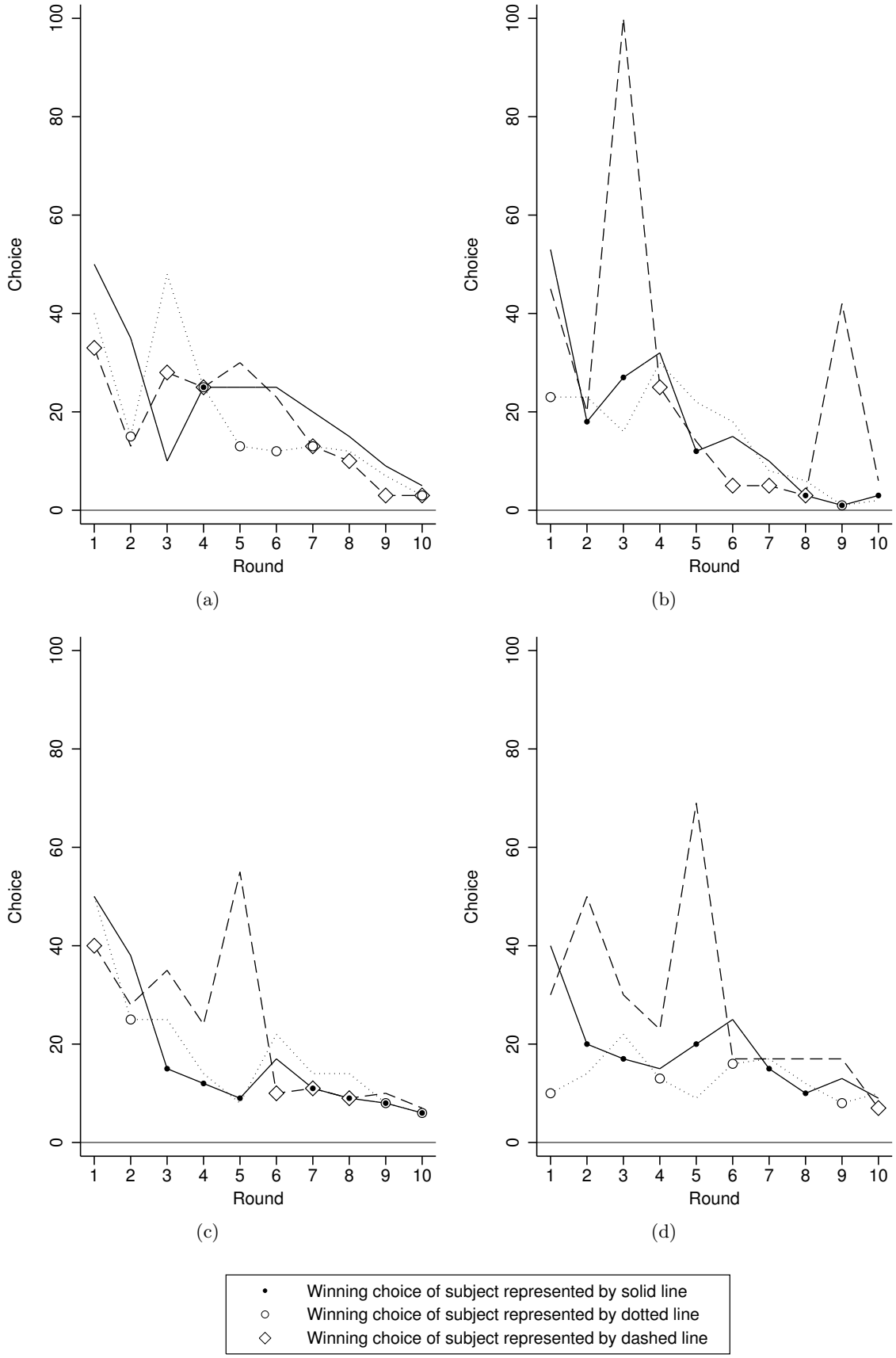
Figure 12: Group-by-group behavior: own-matched high ability groups.



Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 13: Group-by-group behavior: own-matched high ability groups.

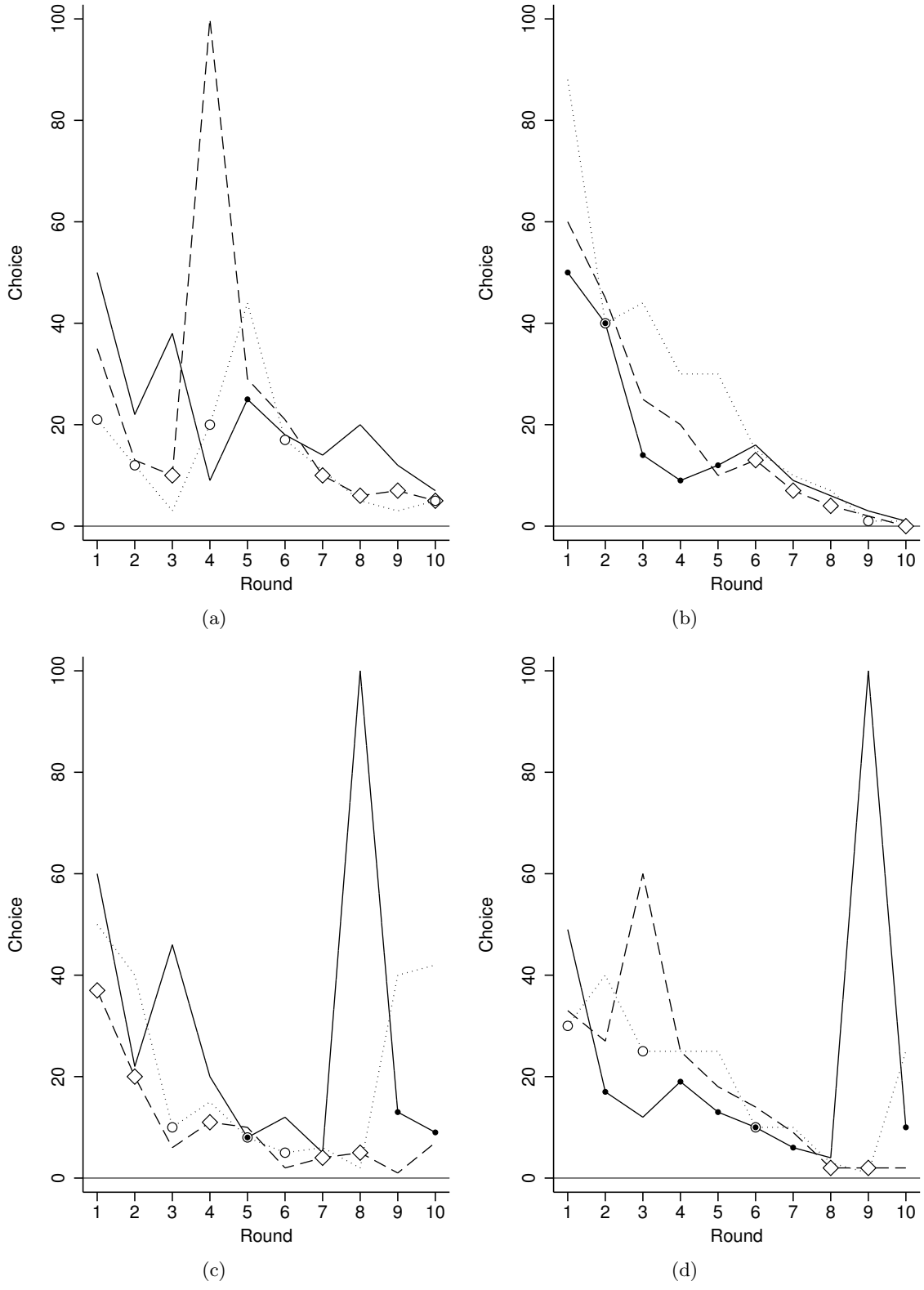


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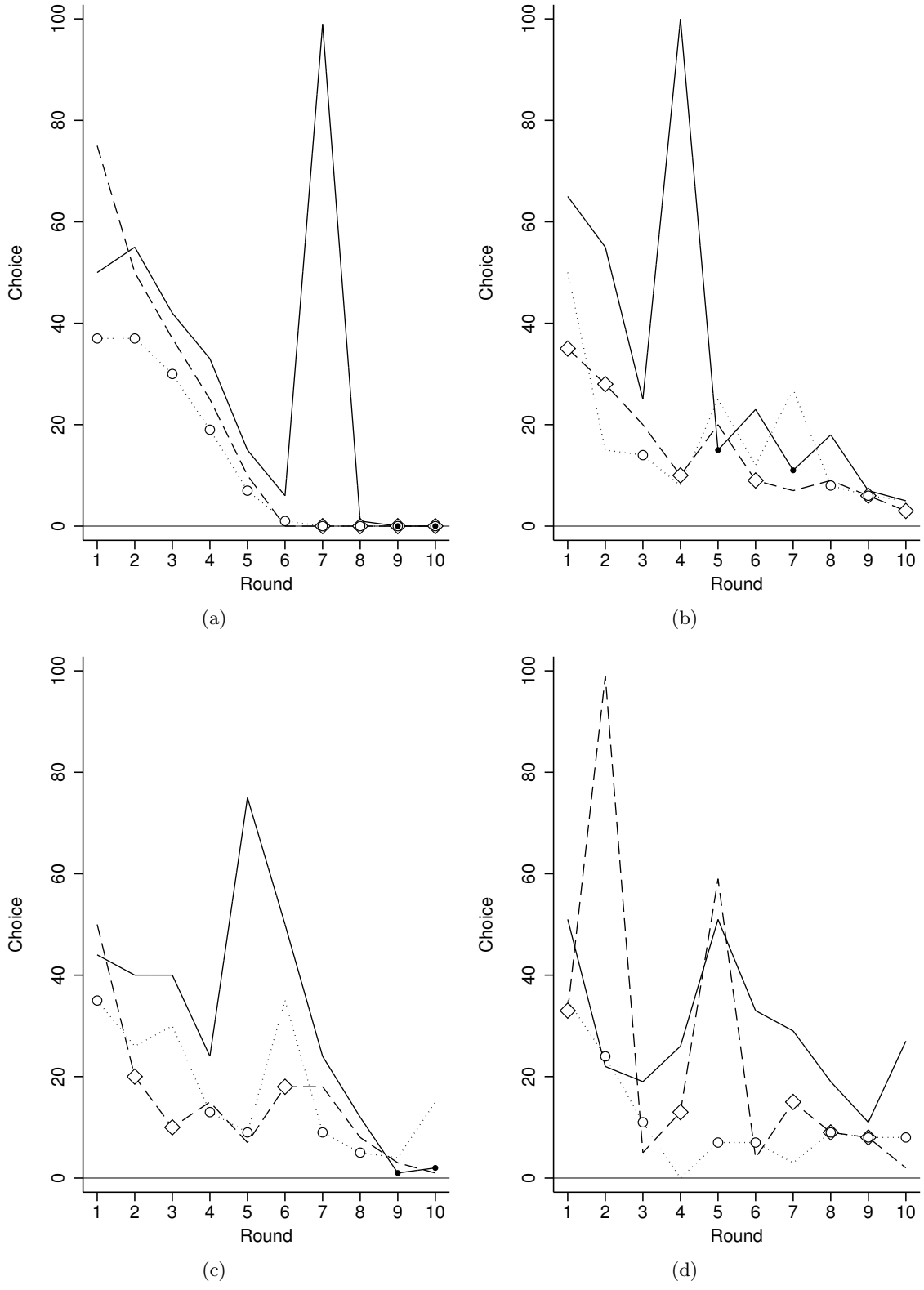
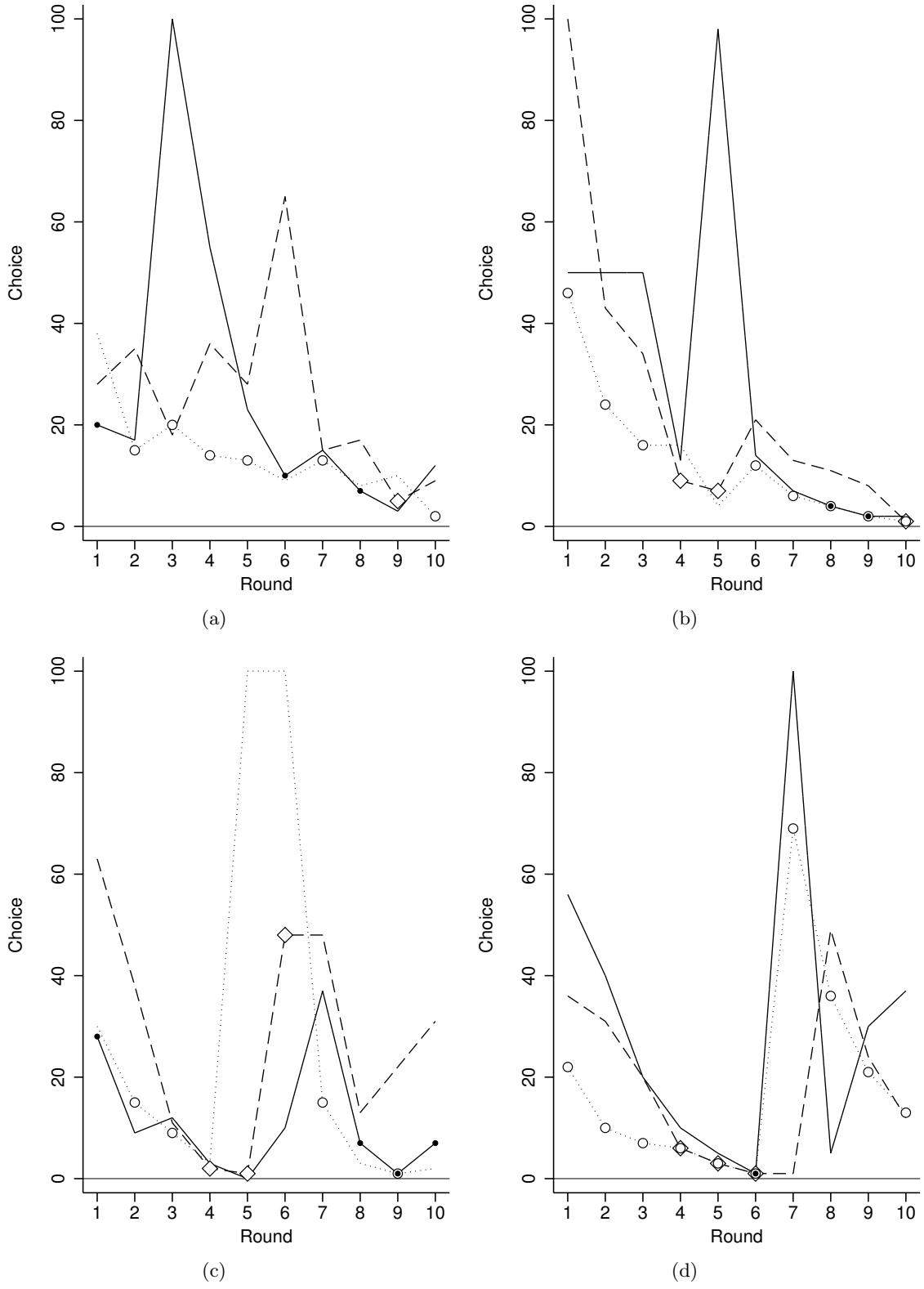
Figure 14: Group-by-group behavior: own-matched high ability groups.



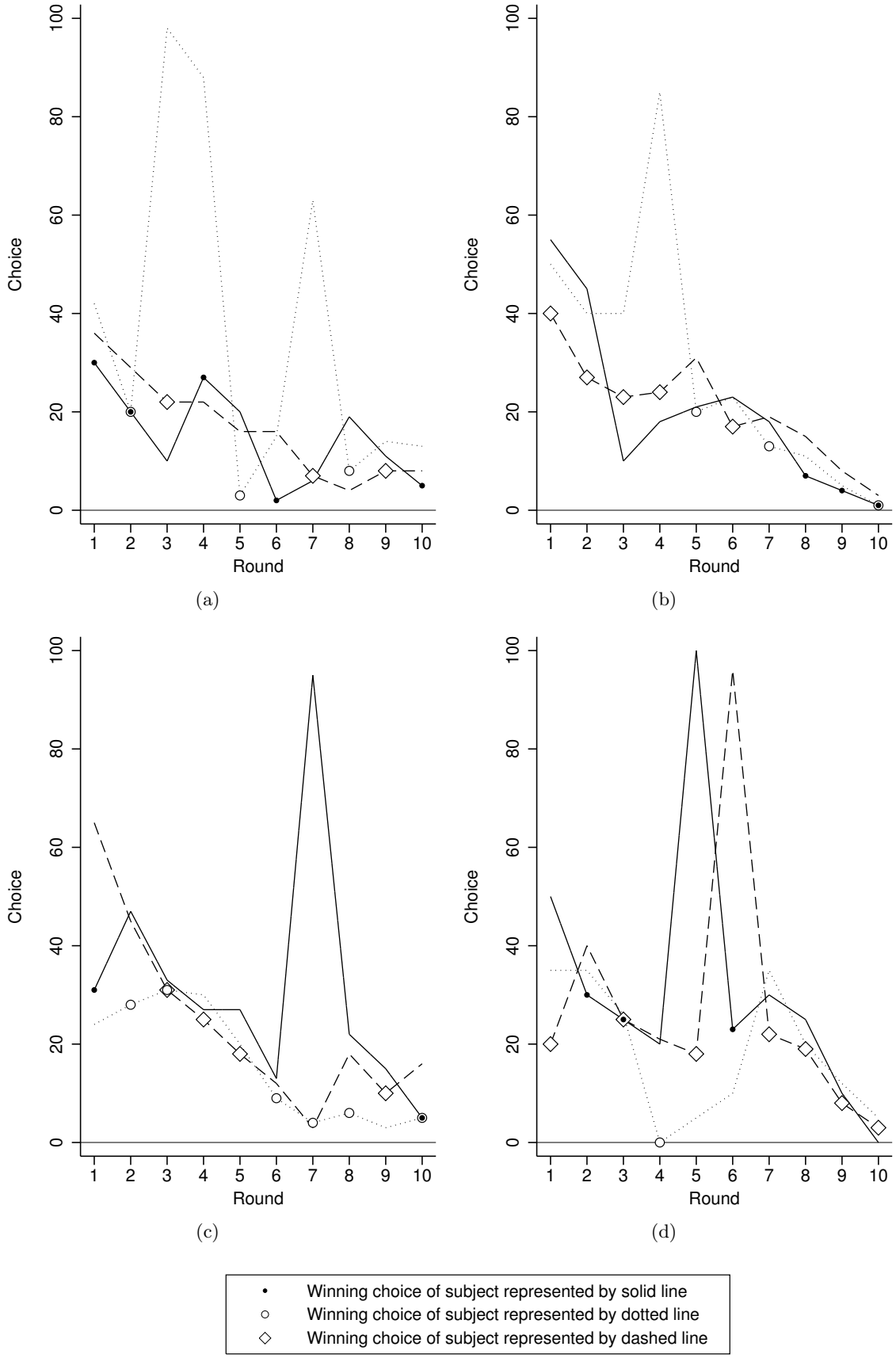
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 15: Group-by-group behavior: own-matched high ability groups.



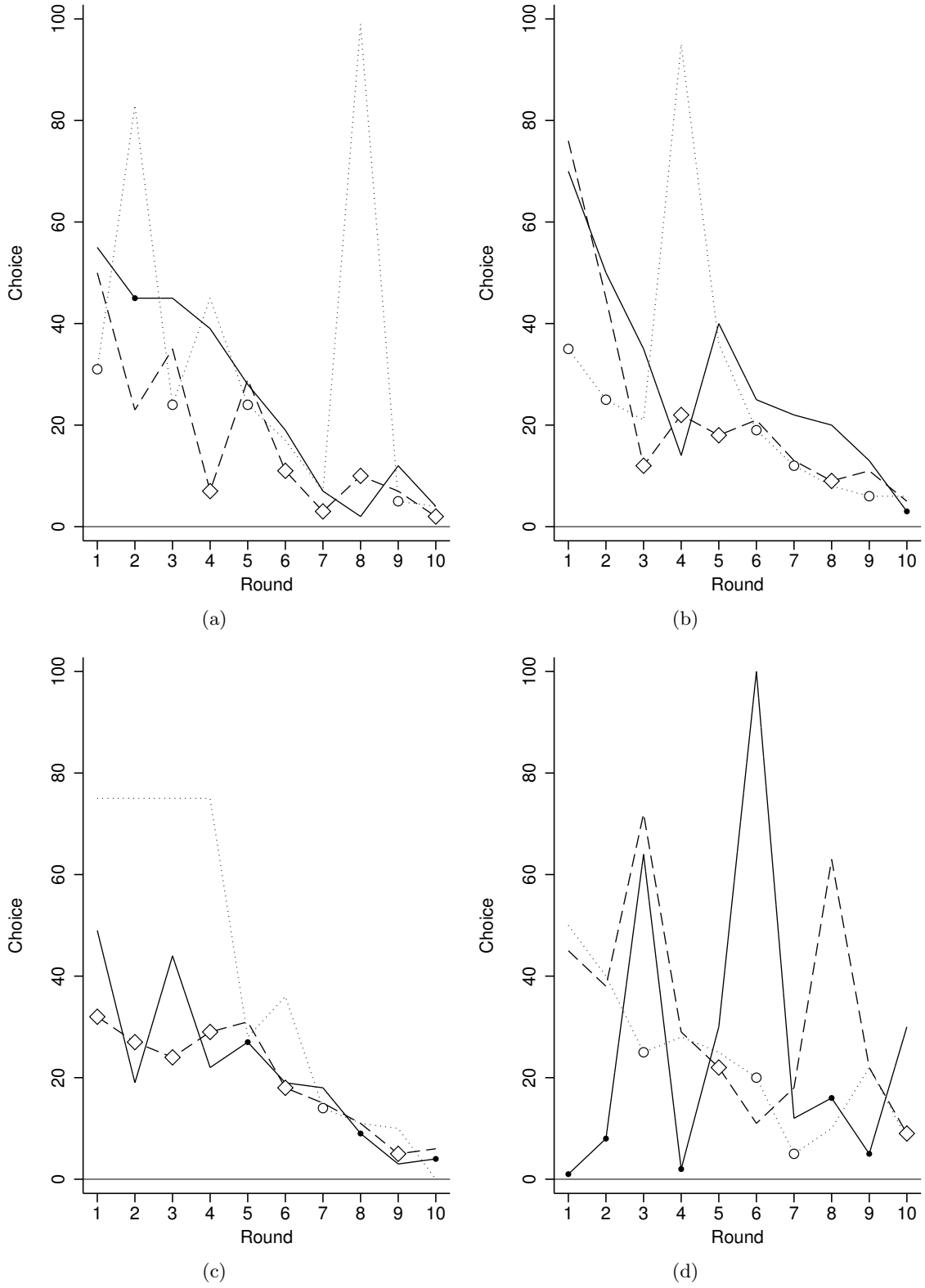
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 16: Group-by-group behavior: own-matched high ability groups.



Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 17: Group-by-group behavior: own-matched high ability groups.



Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 18: Group-by-group behavior: own-matched high ability groups.

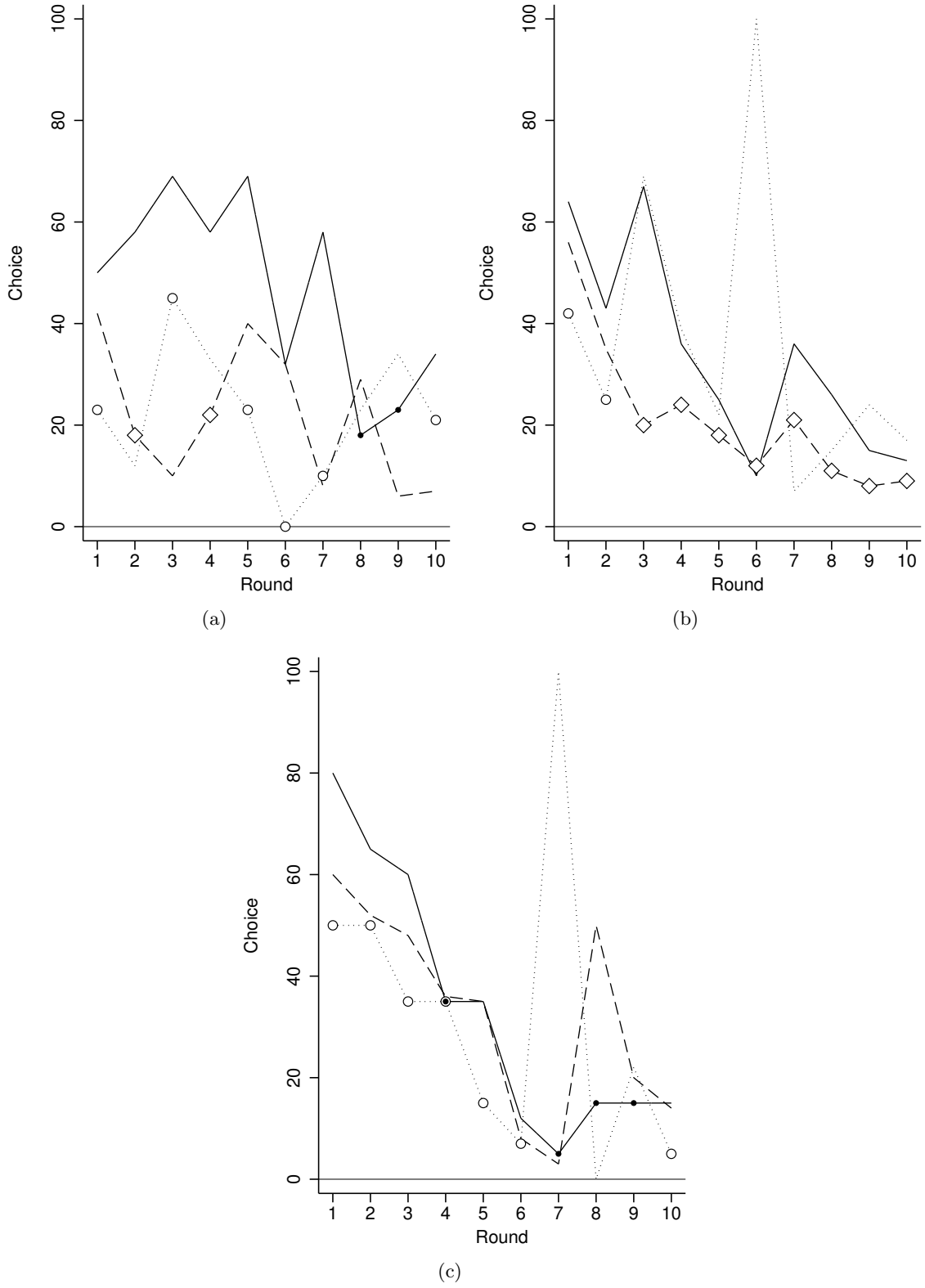


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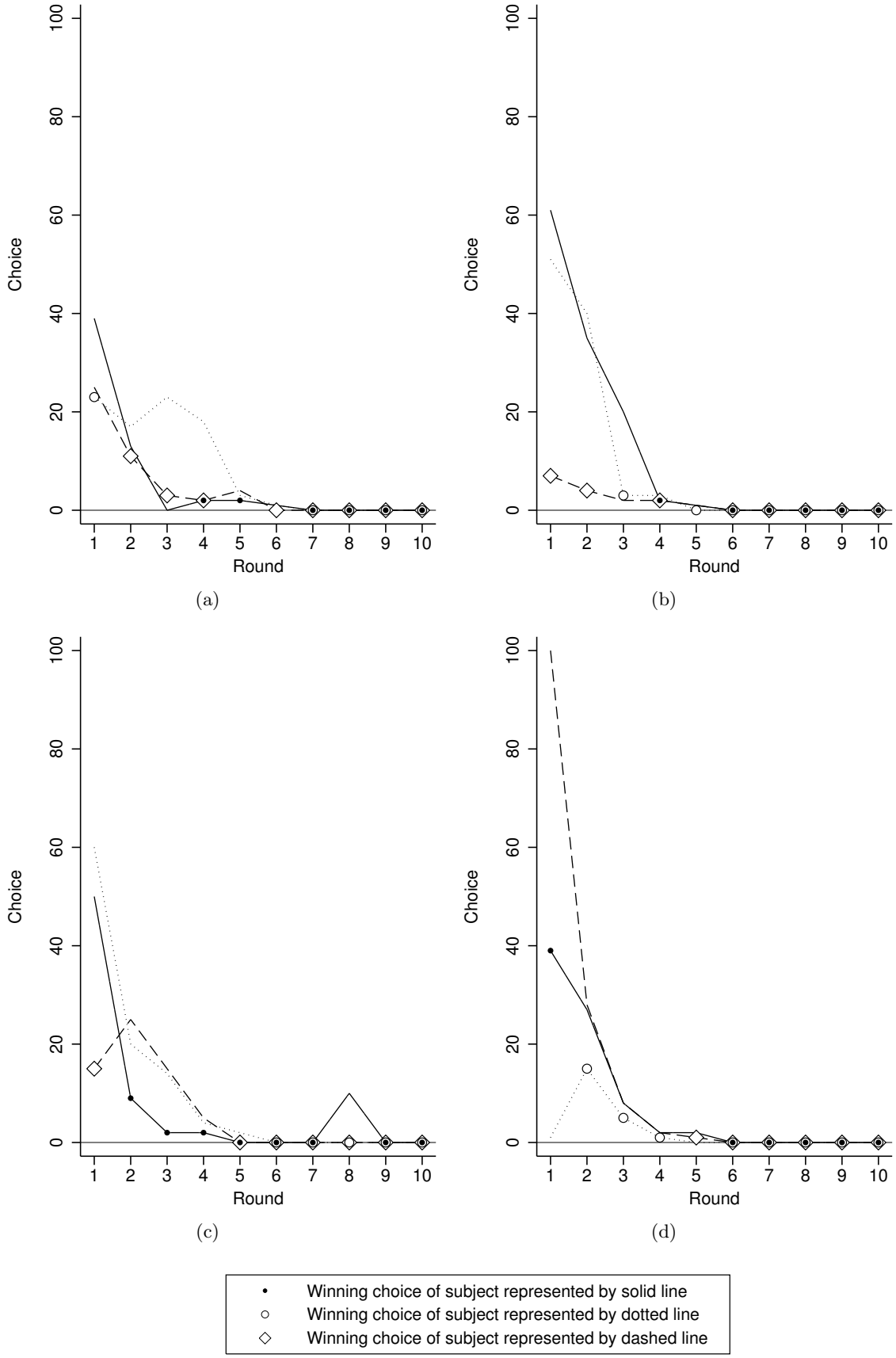
Figure 19: Group-by-group behavior: own-matched high ability groups.



Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 20: Group-by-group behavior: cross-matched groups with 2 high ability subjects.

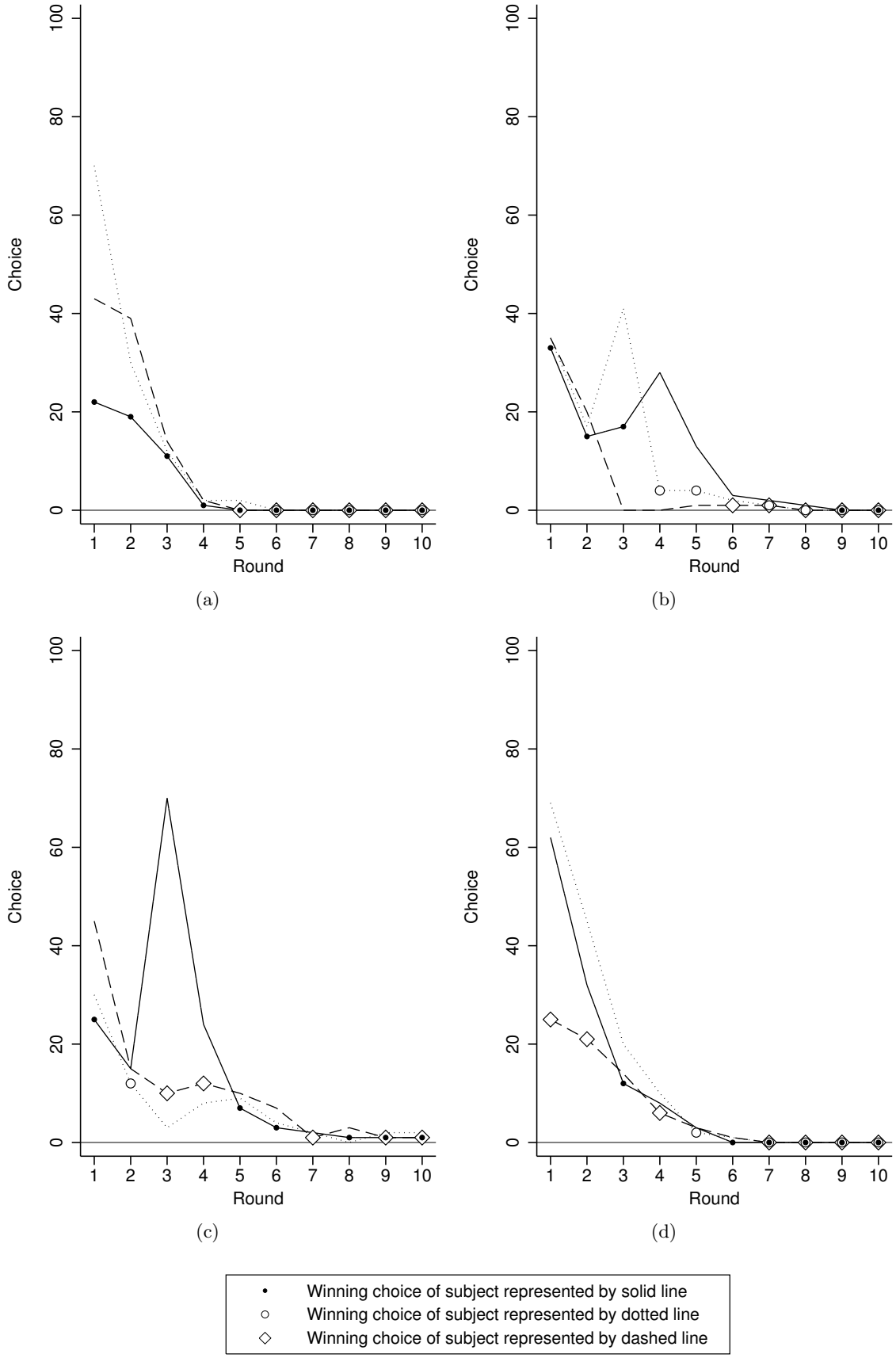


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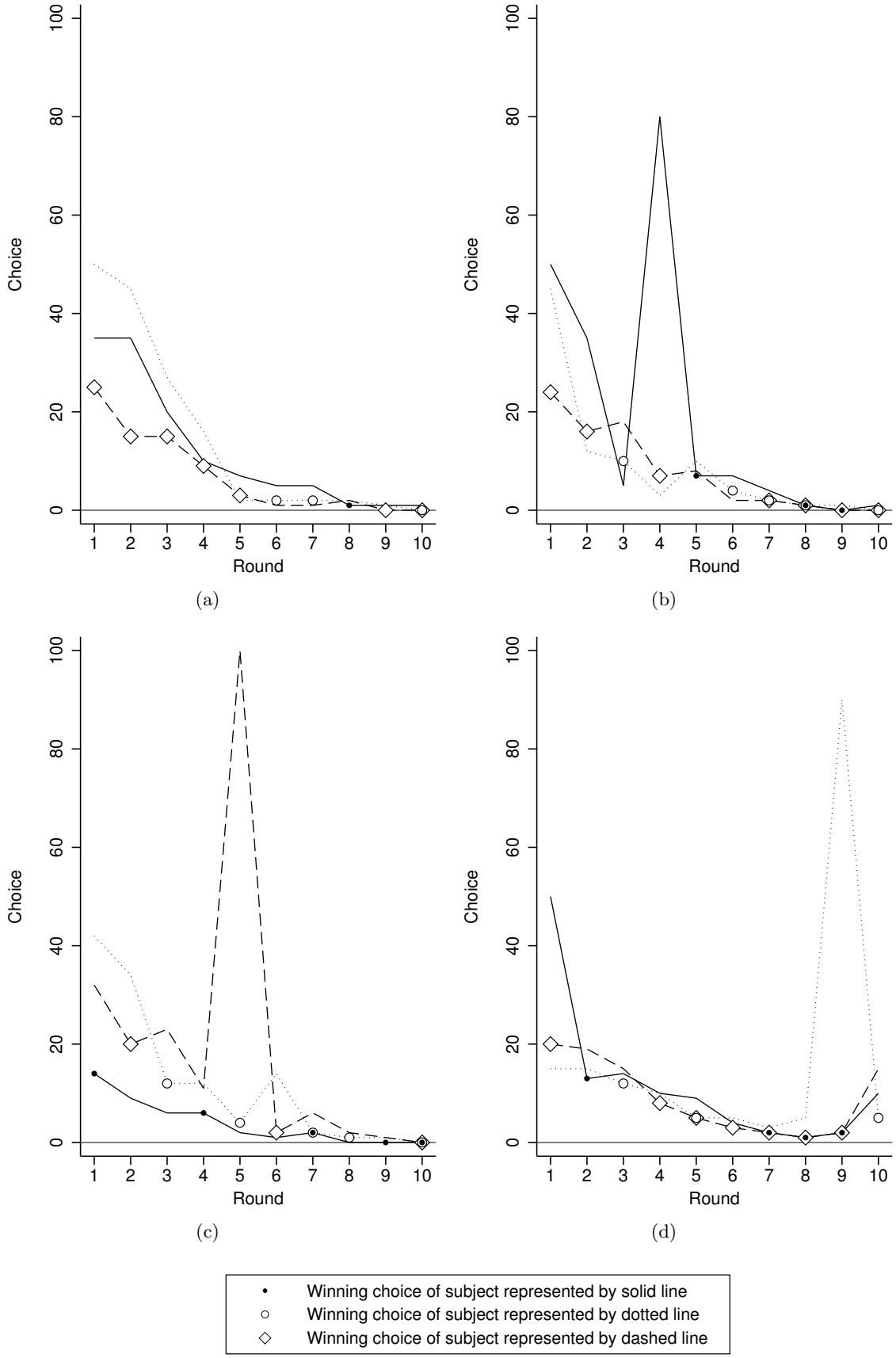
Figure 21: Group-by-group behavior: cross-matched groups with 2 high ability subjects.



Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 22: Group-by-group behavior: cross-matched groups with 2 high ability subjects.

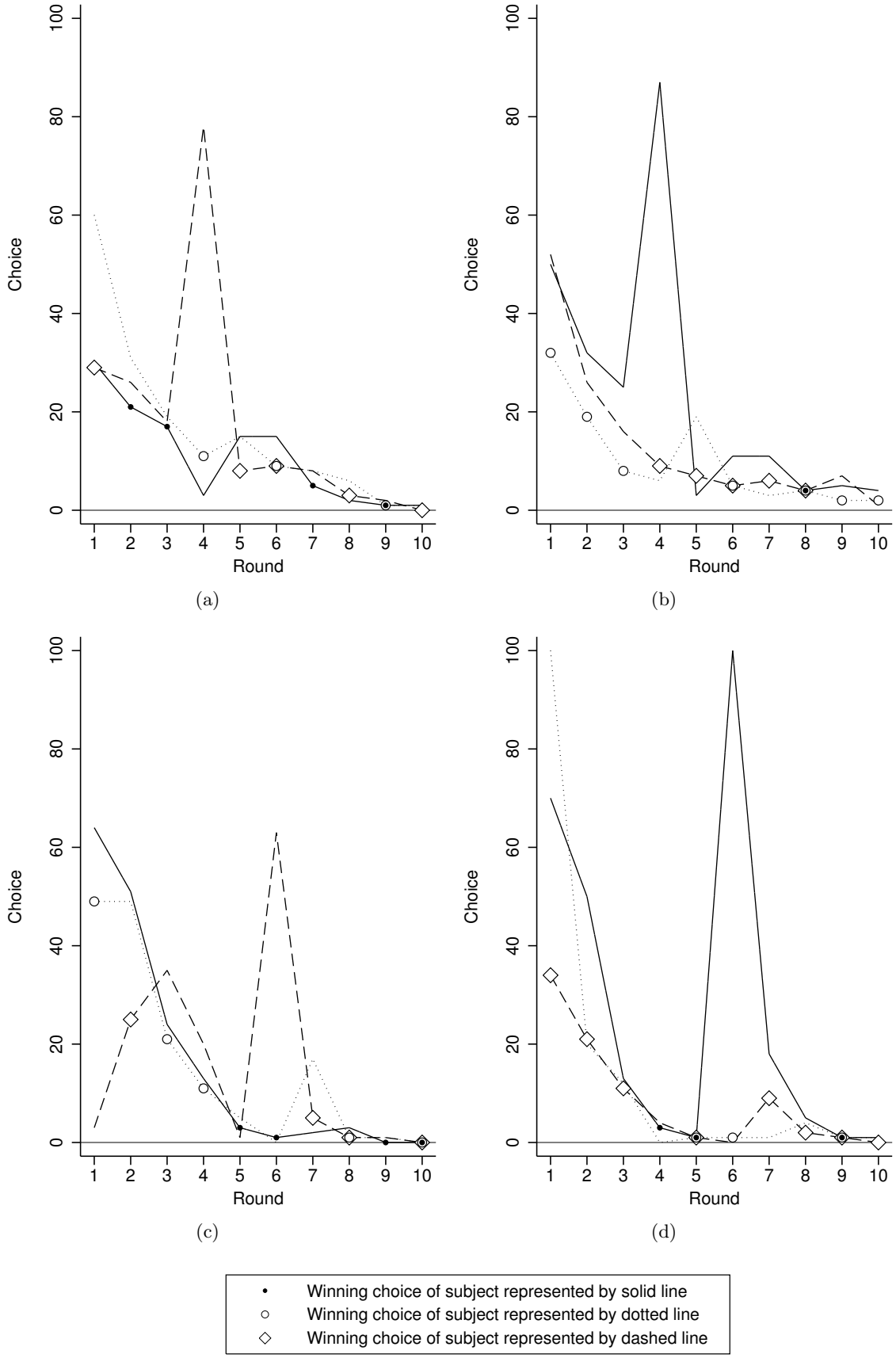


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Figure 23: Group-by-group behavior: cross-matched groups with 2 high ability subjects.

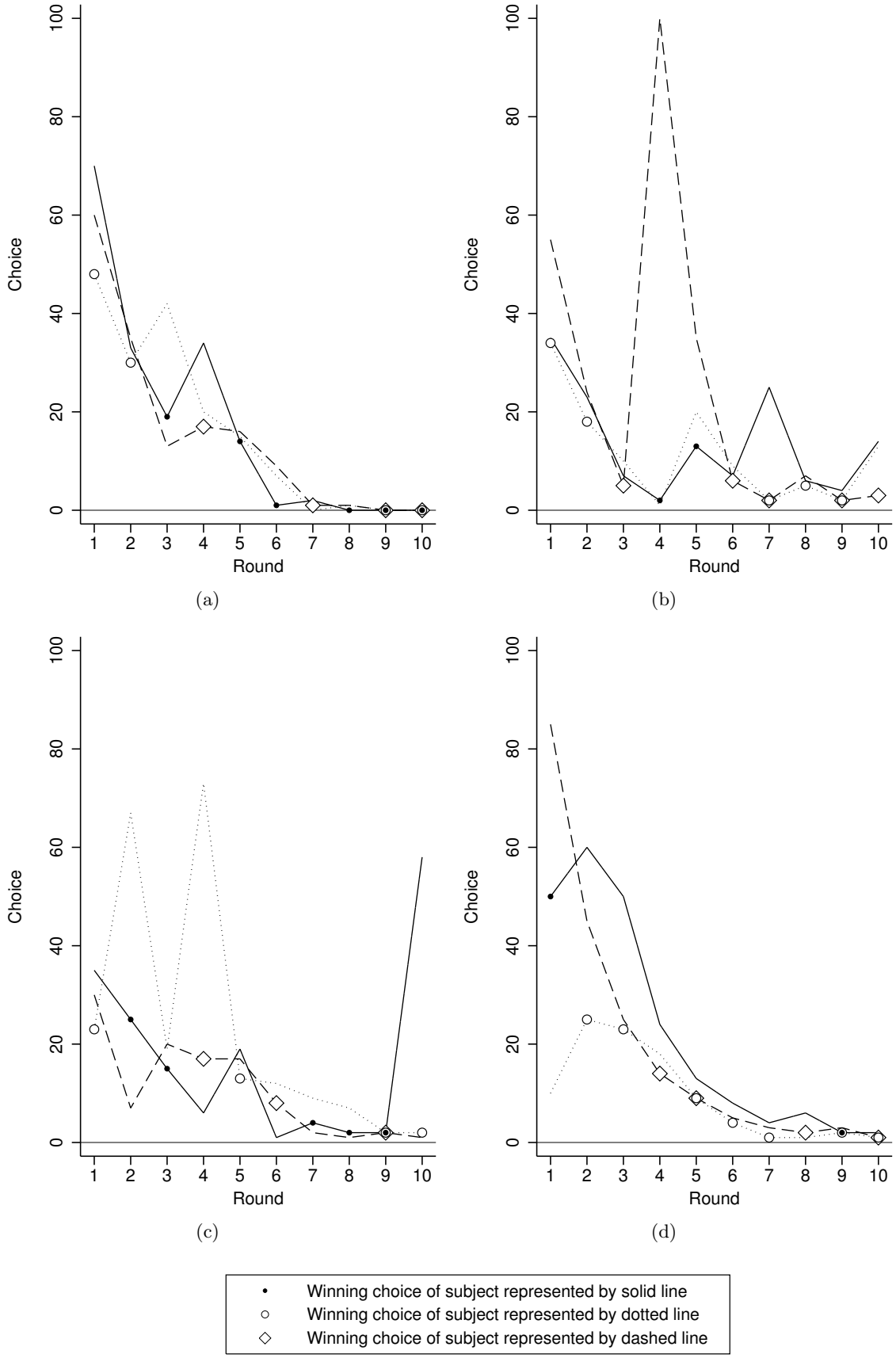

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Figure 24: Group-by-group behavior: cross-matched groups with 2 high ability subjects.

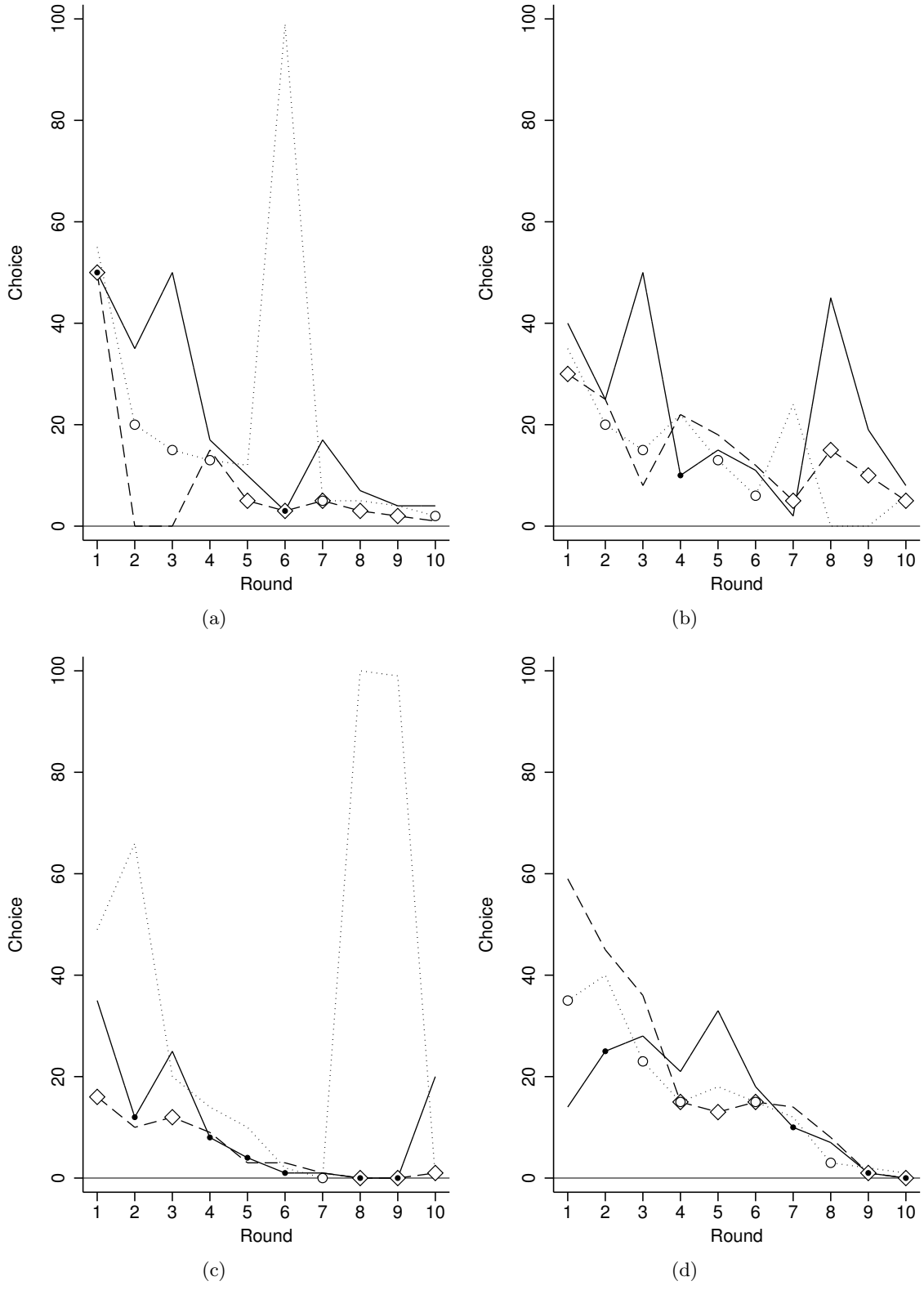

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Figure 25: Group-by-group behavior: cross-matched groups with 2 high ability subjects.

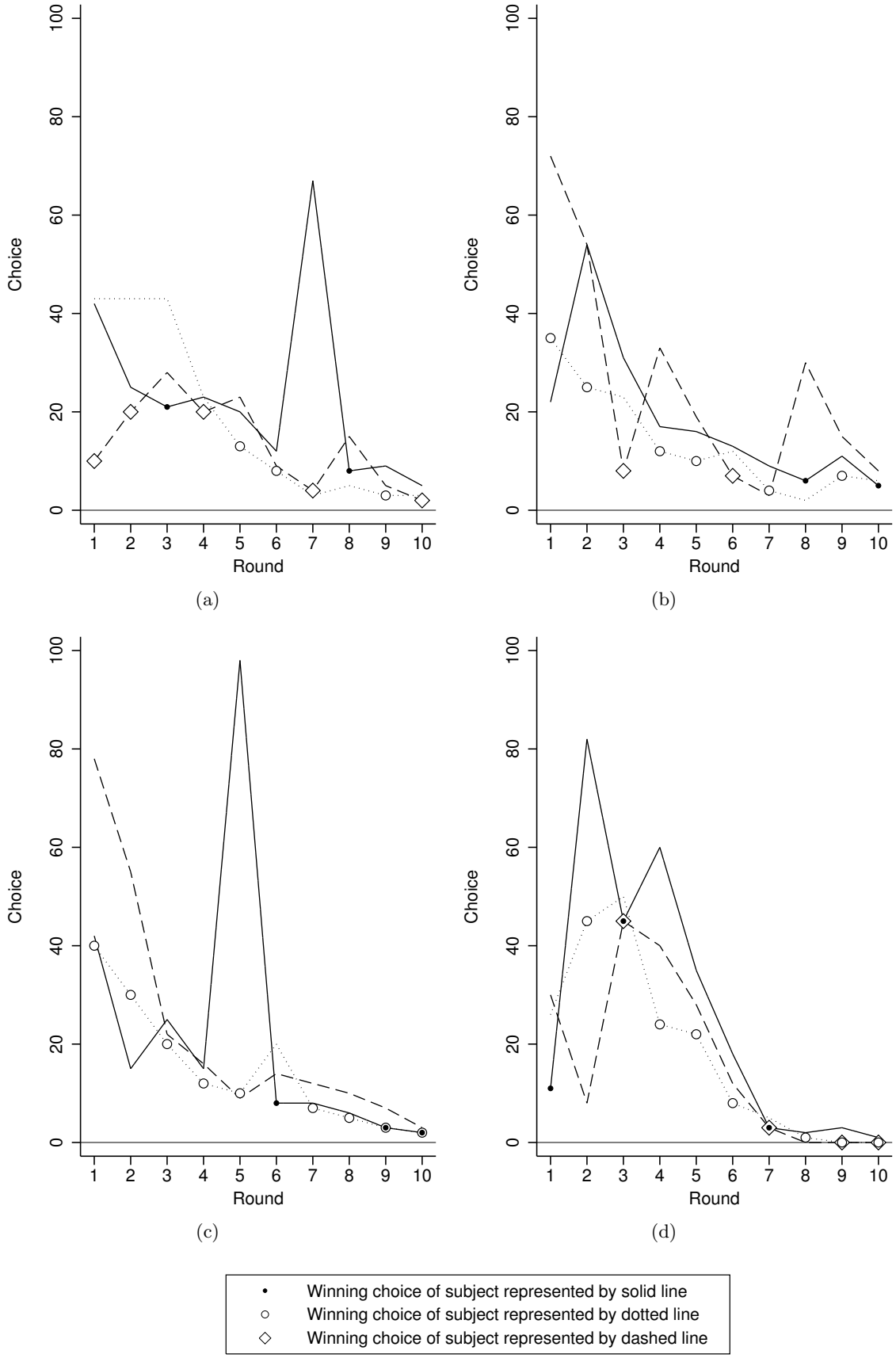

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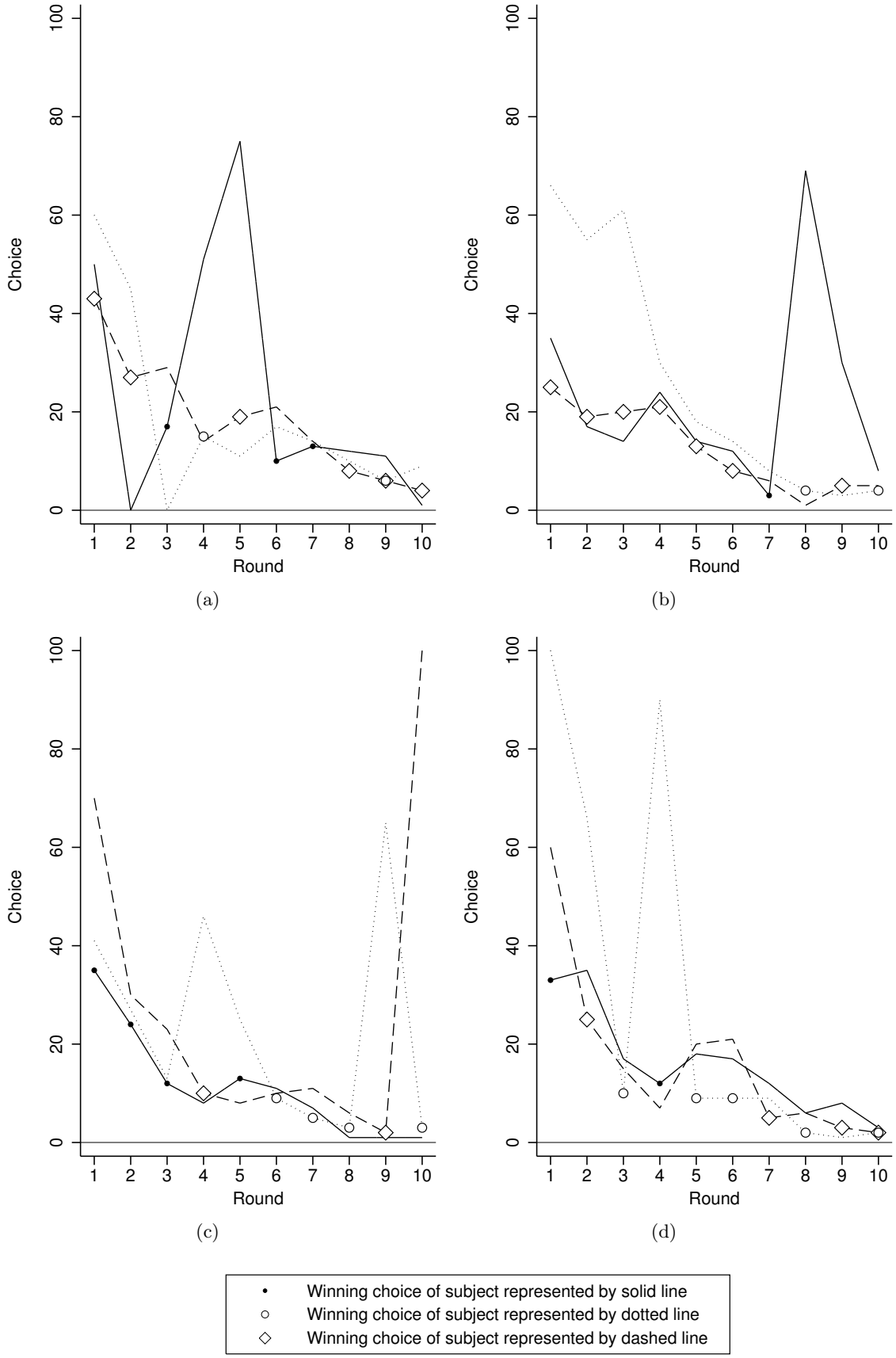
Figure 26: Group-by-group behavior: cross-matched groups with 2 high ability subjects.



Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 27: Group-by-group behavior: cross-matched groups with 2 high ability subjects.

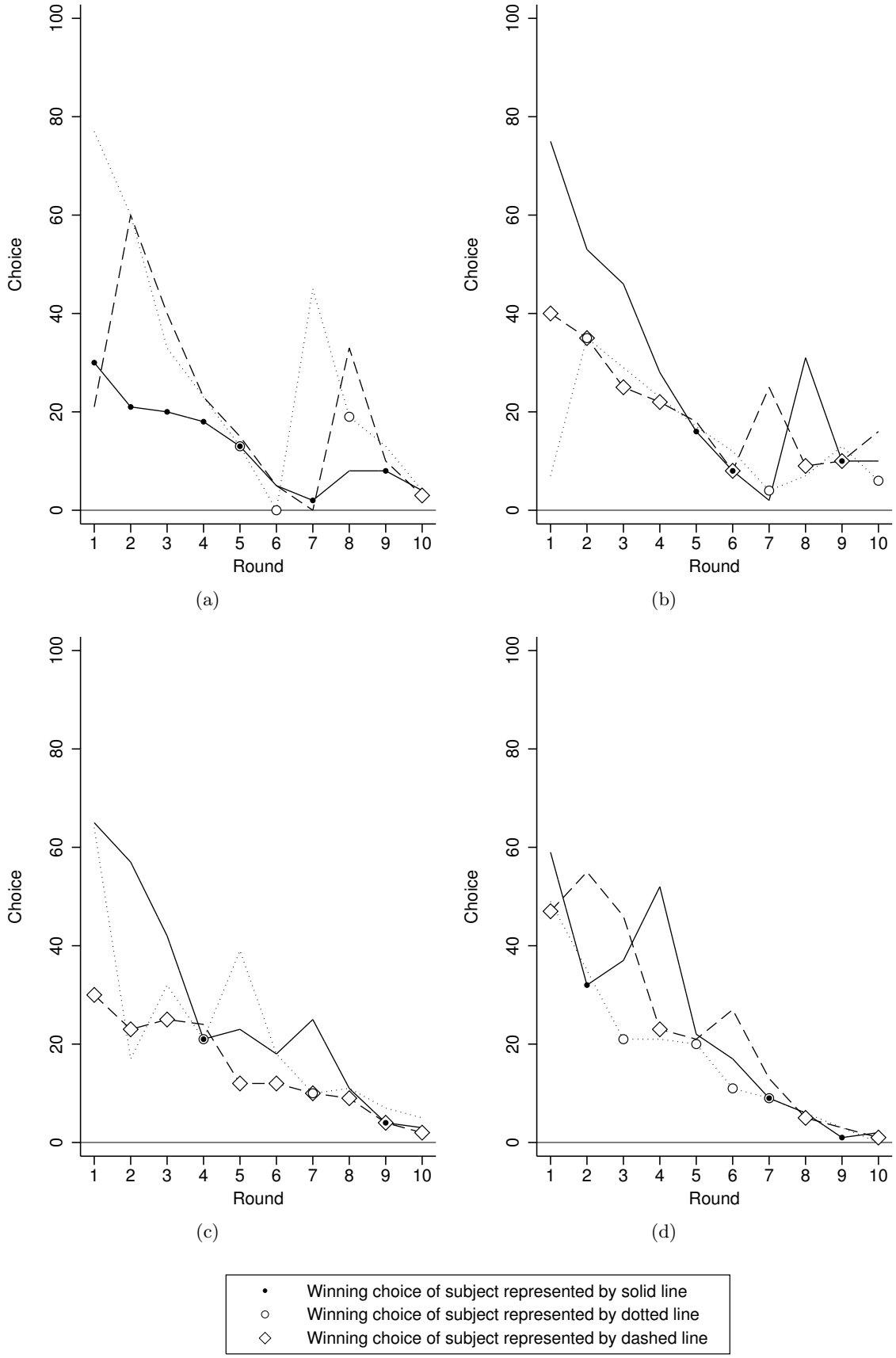


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Figure 28: Group-by-group behavior: cross-matched groups with 2 high ability subjects.

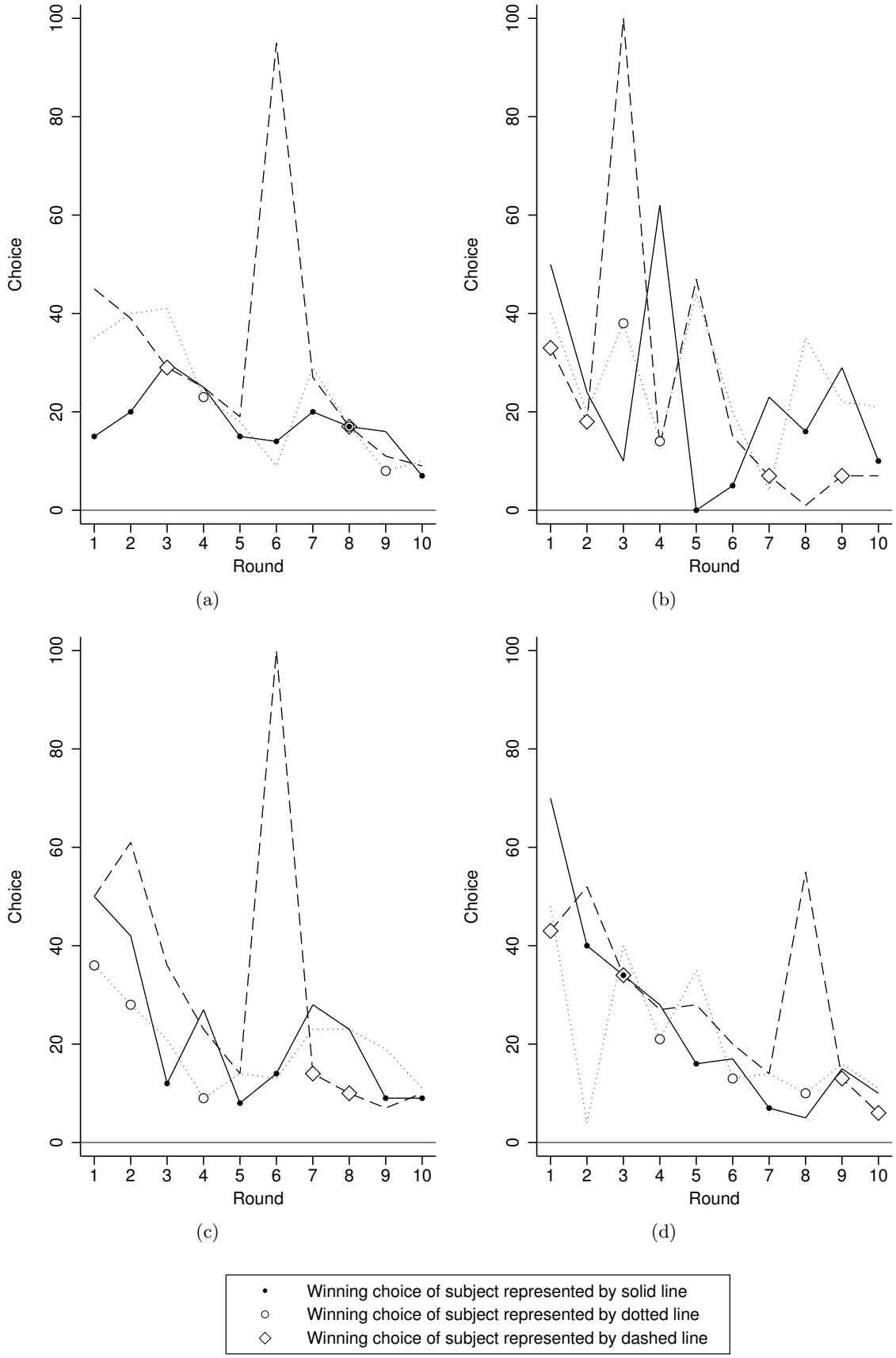

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Figure 29: Group-by-group behavior: cross-matched groups with 2 high ability subjects.

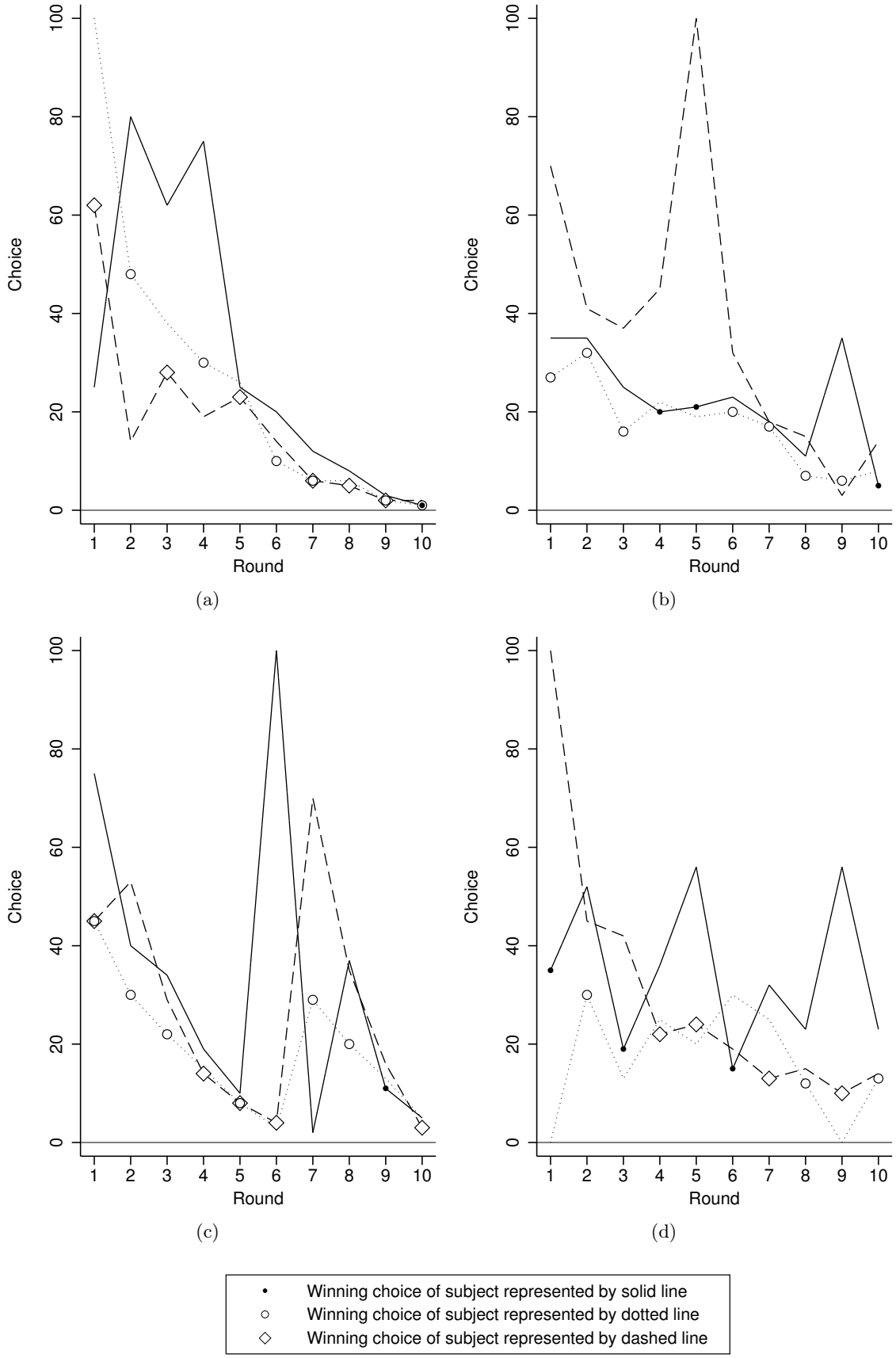

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Figure 30: Group-by-group behavior: cross-matched groups with 2 high ability subjects.

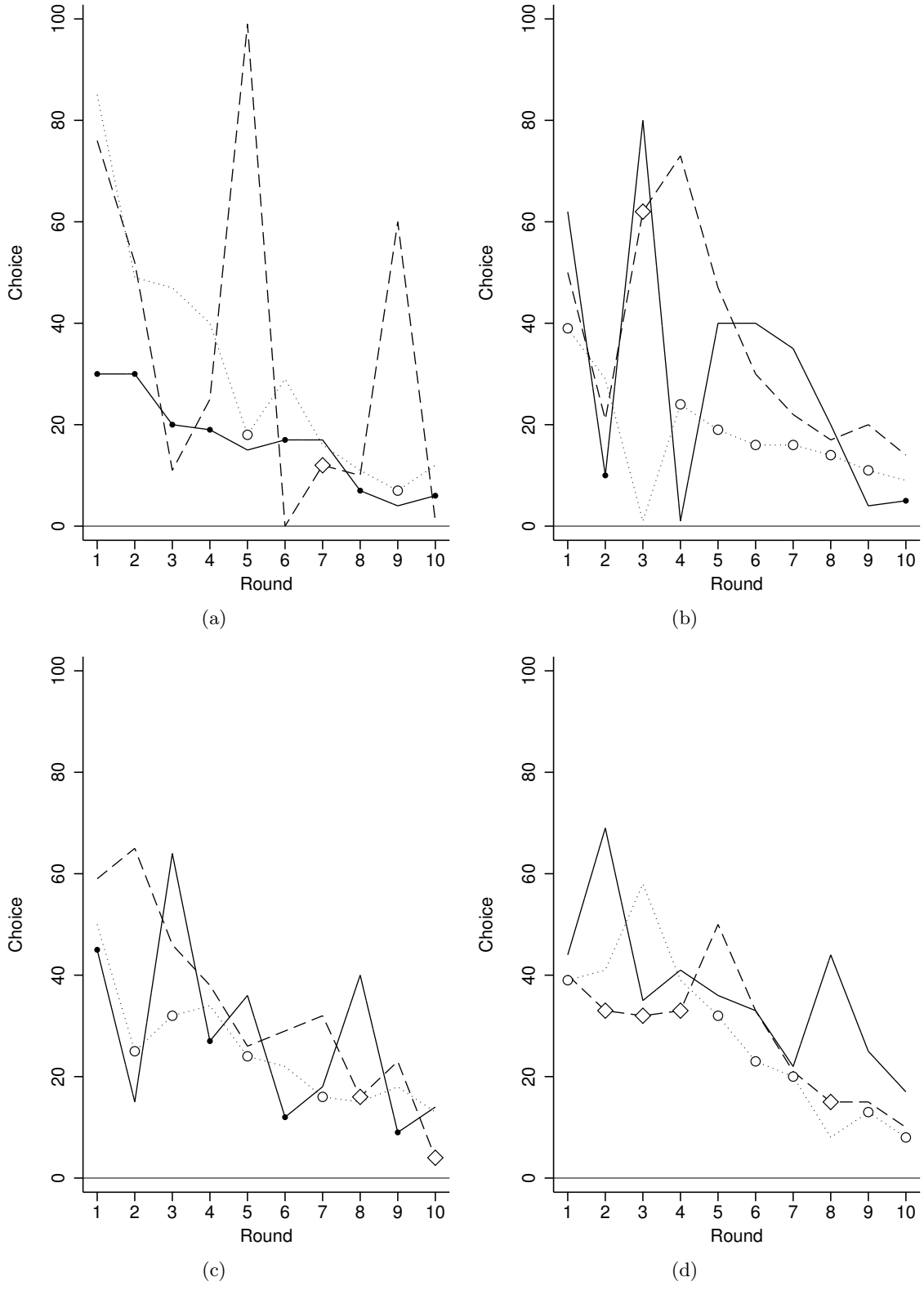

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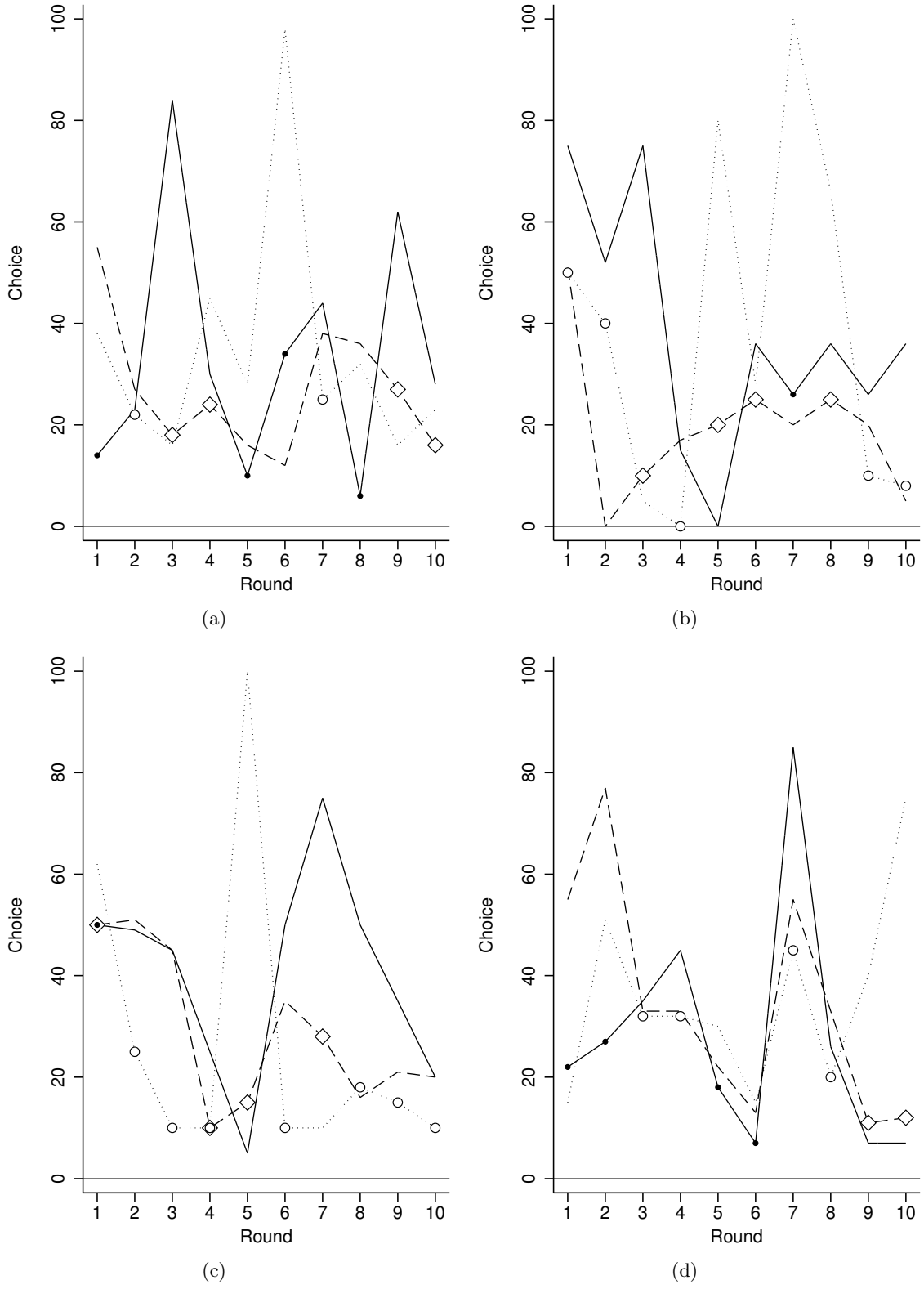
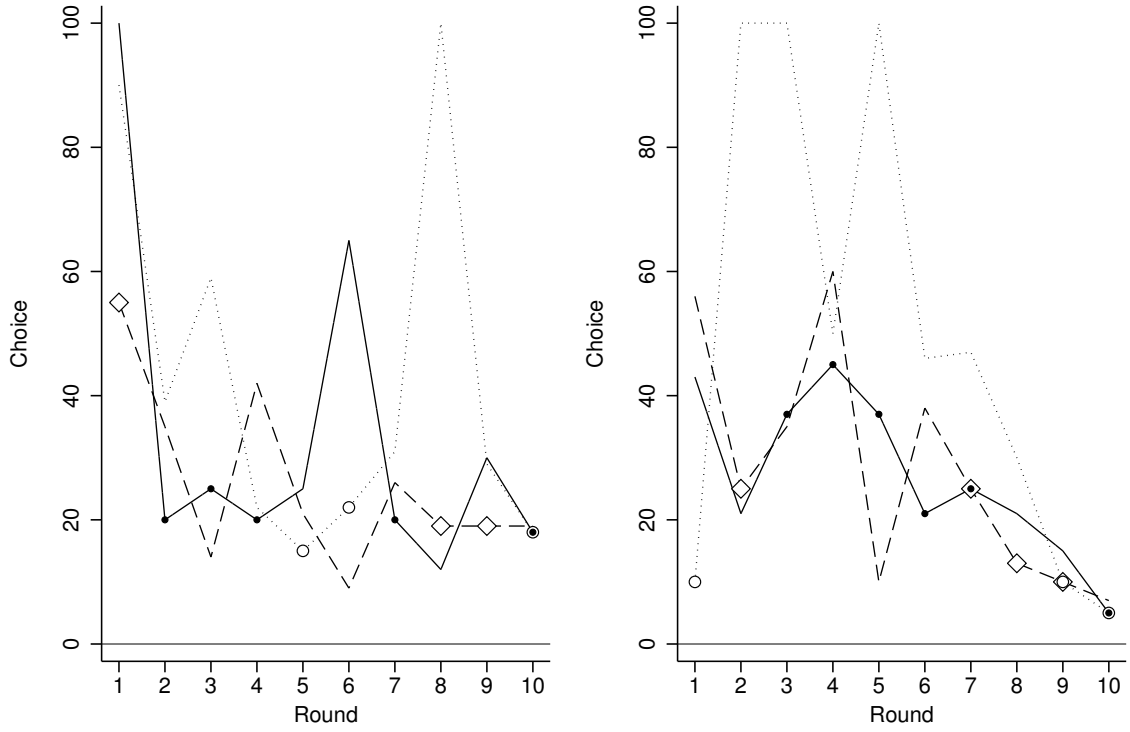
Figure 31: Group-by-group behavior: cross-matched groups with 2 high ability subjects.



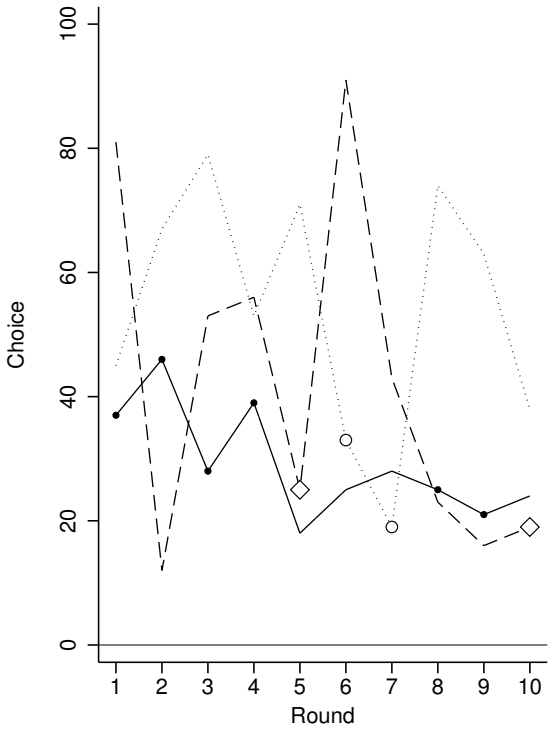
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 32: Group-by-group behavior: cross-matched groups with 2 high ability subjects.

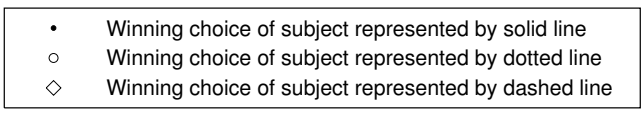


(a)

(b)

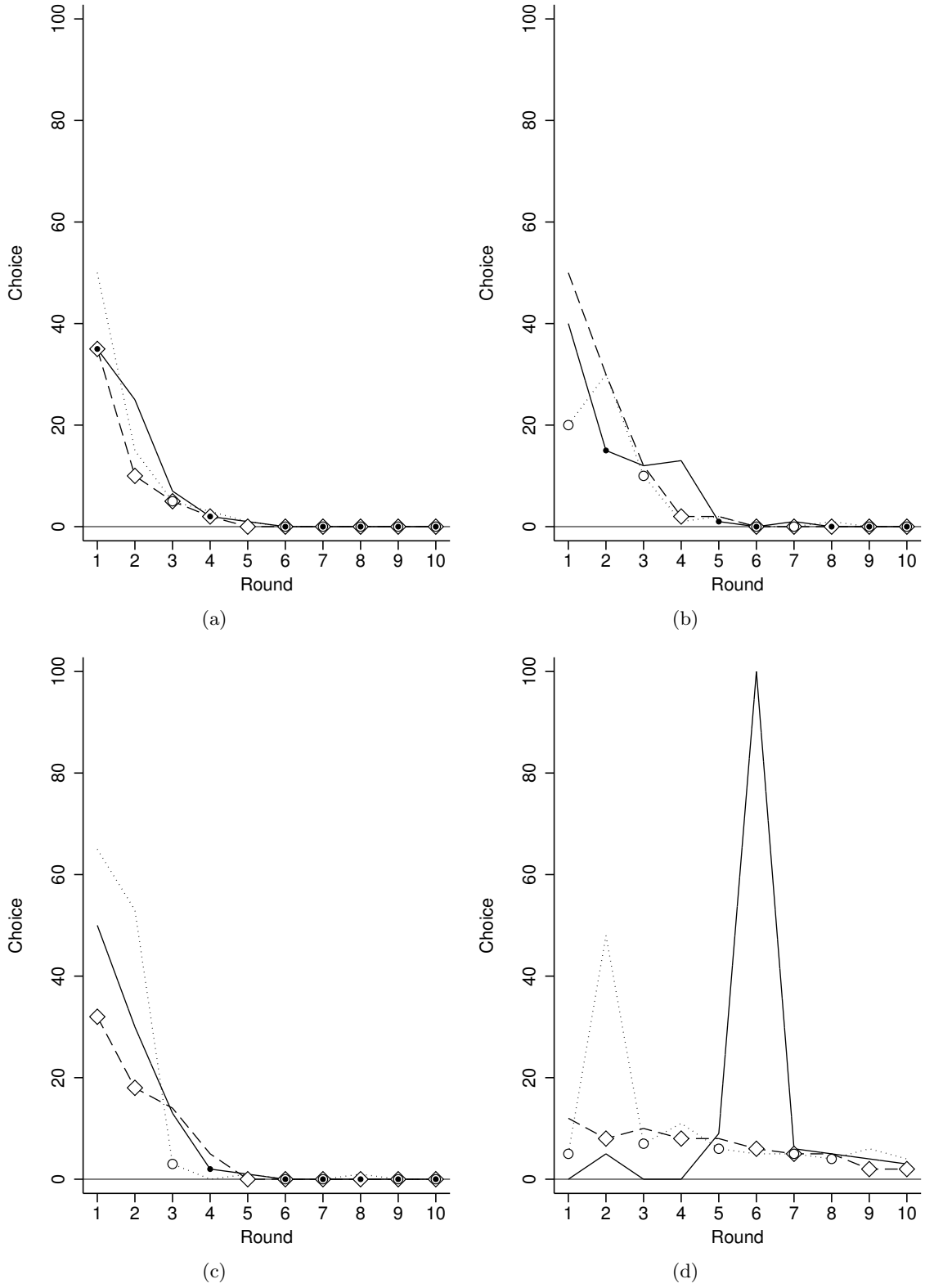


(c)



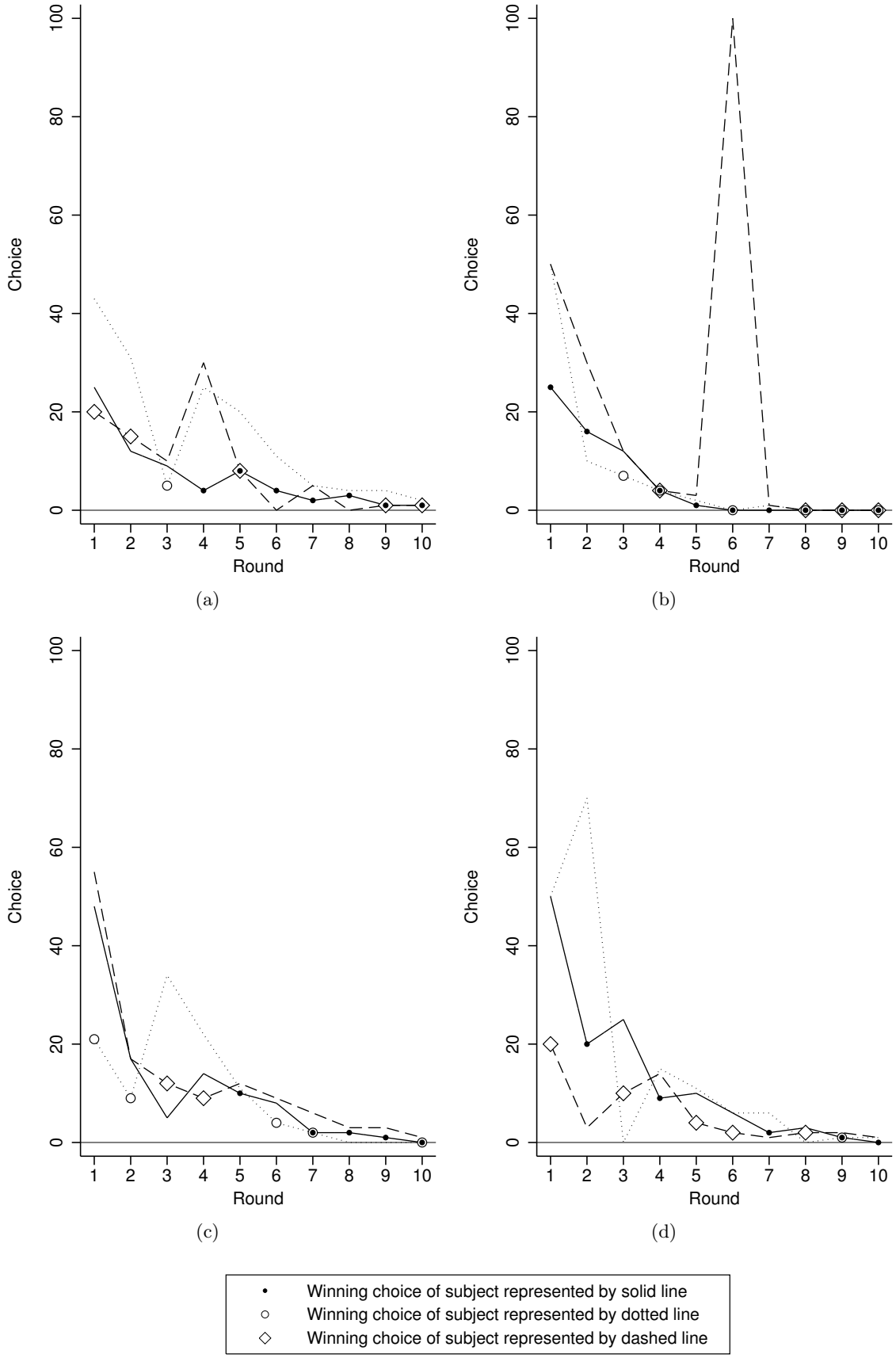
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 33: Group-by-group behavior: cross-matched groups with 2 high ability subjects.



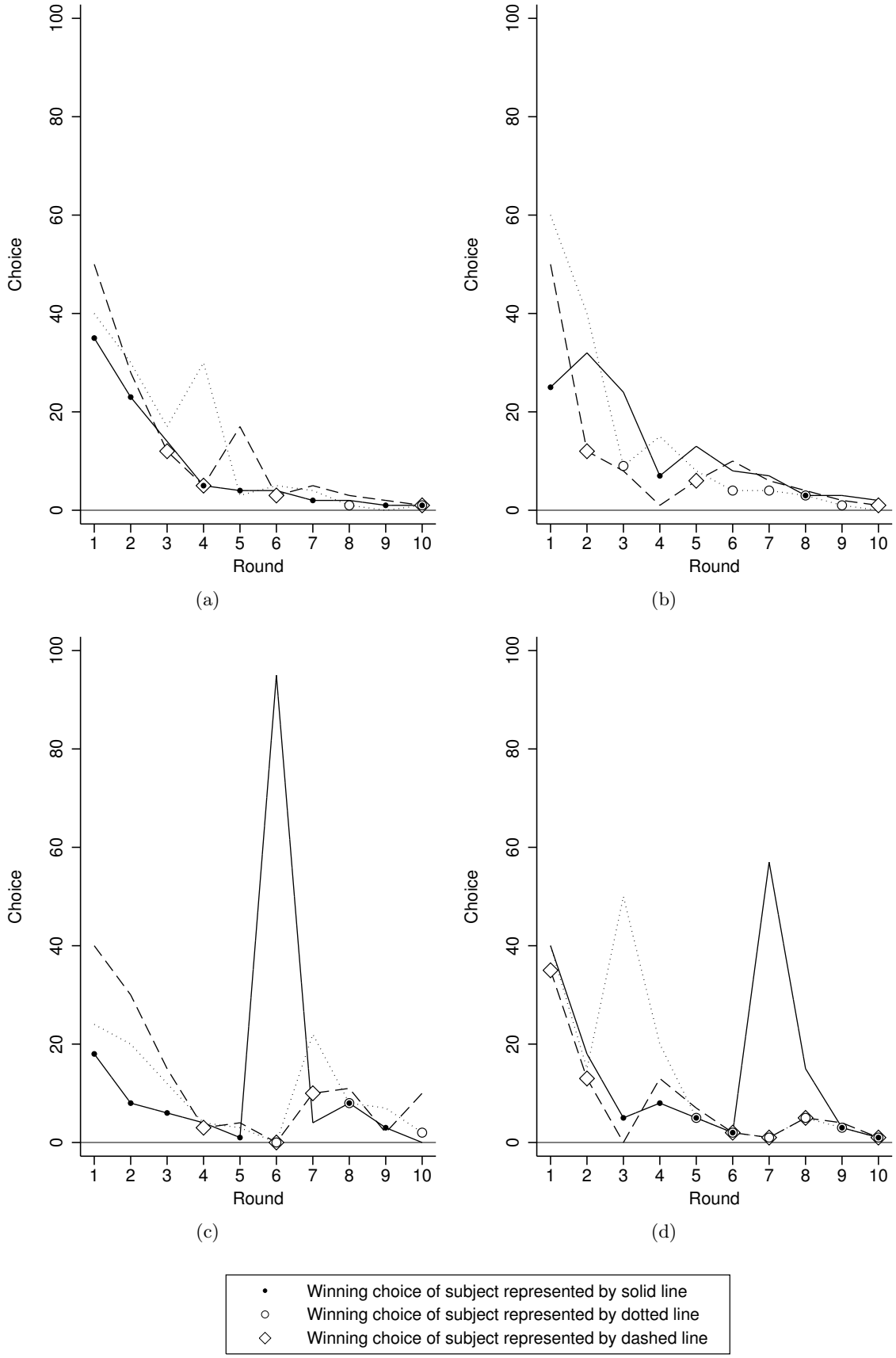
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 34: Group-by-group behavior: cross-matched groups with 1 high ability subject.



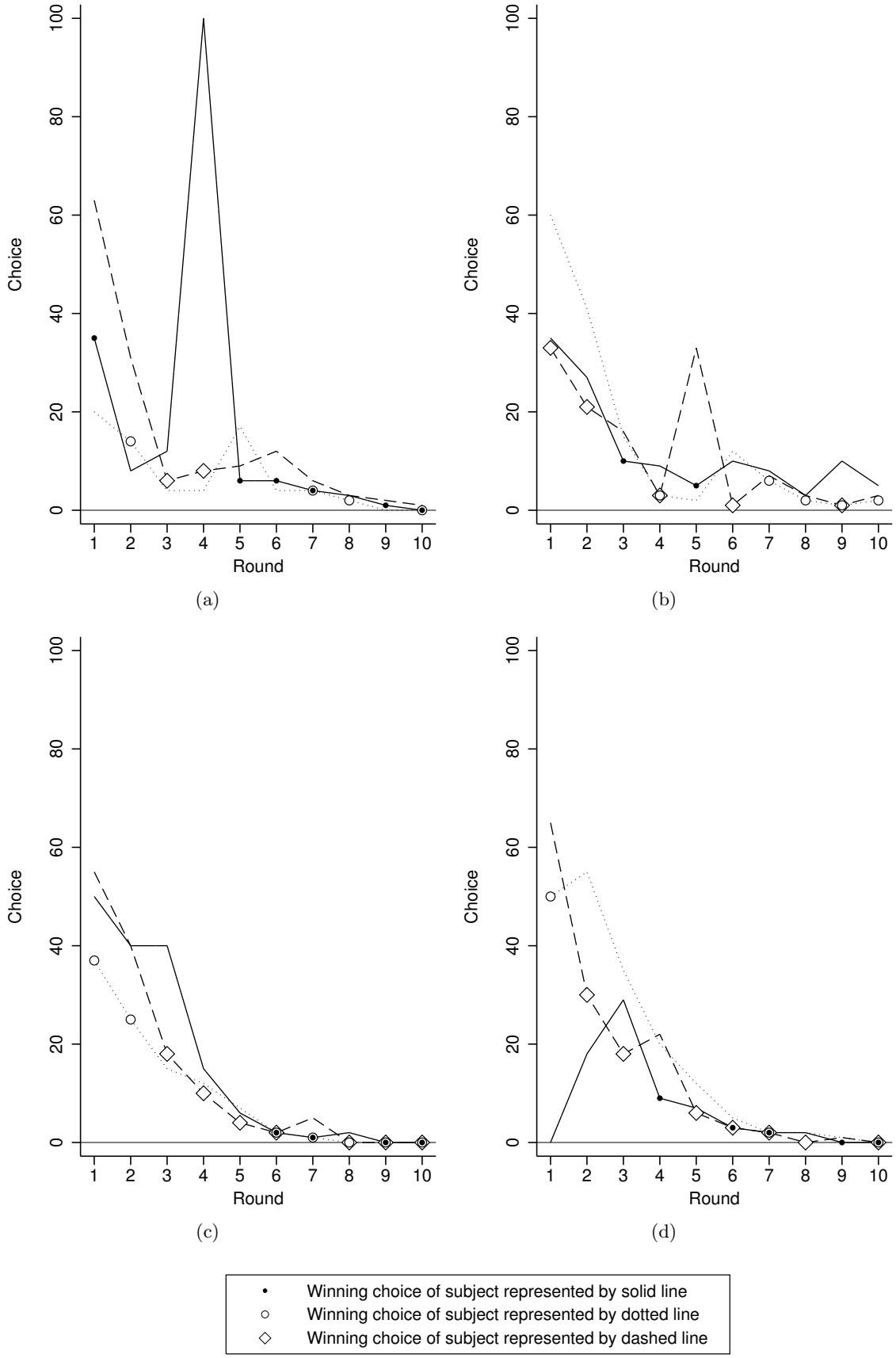
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 35: Group-by-group behavior: cross-matched groups with 1 high ability subject.



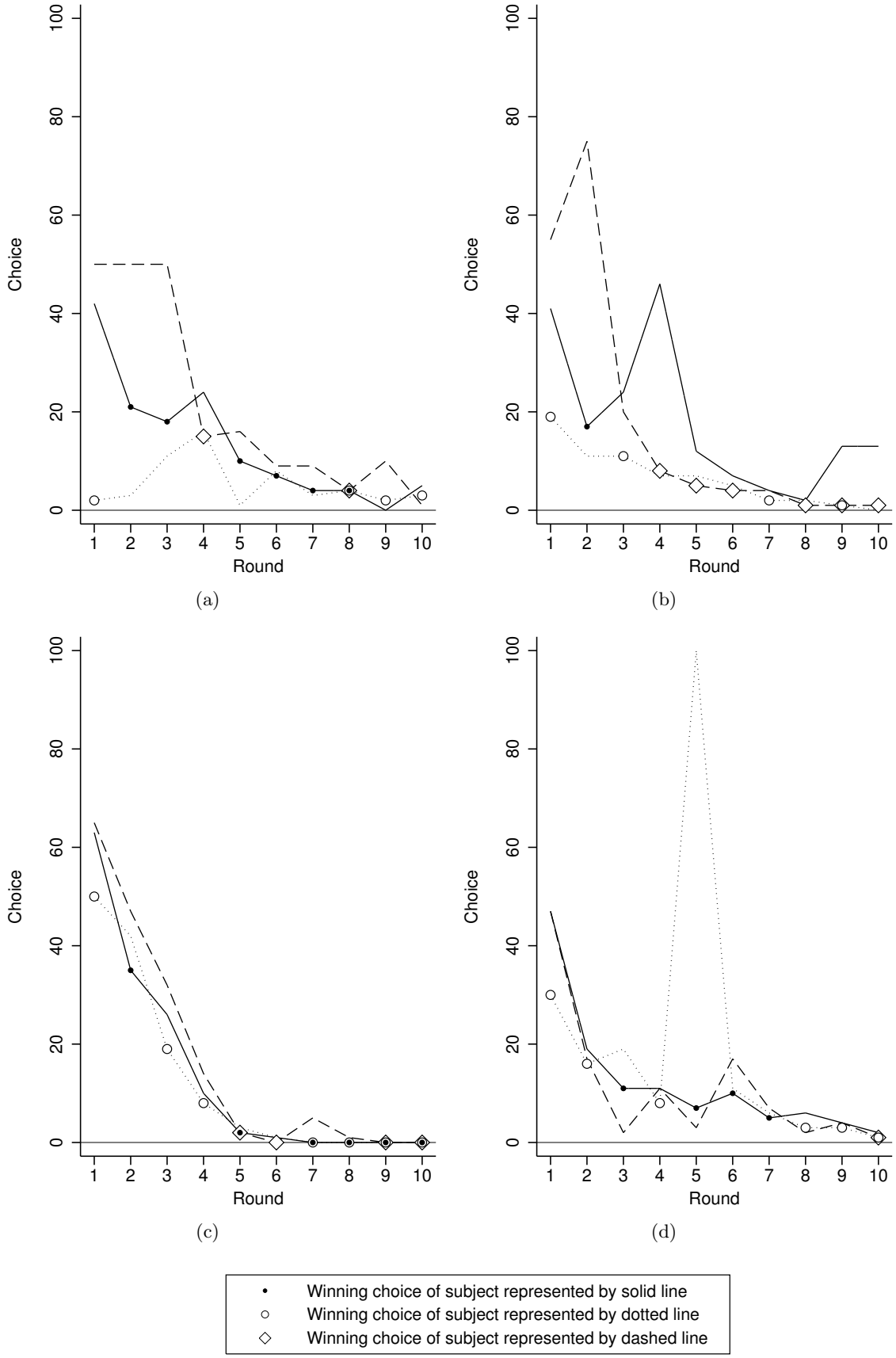
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 36: Group-by-group behavior: cross-matched groups with 1 high ability subject.



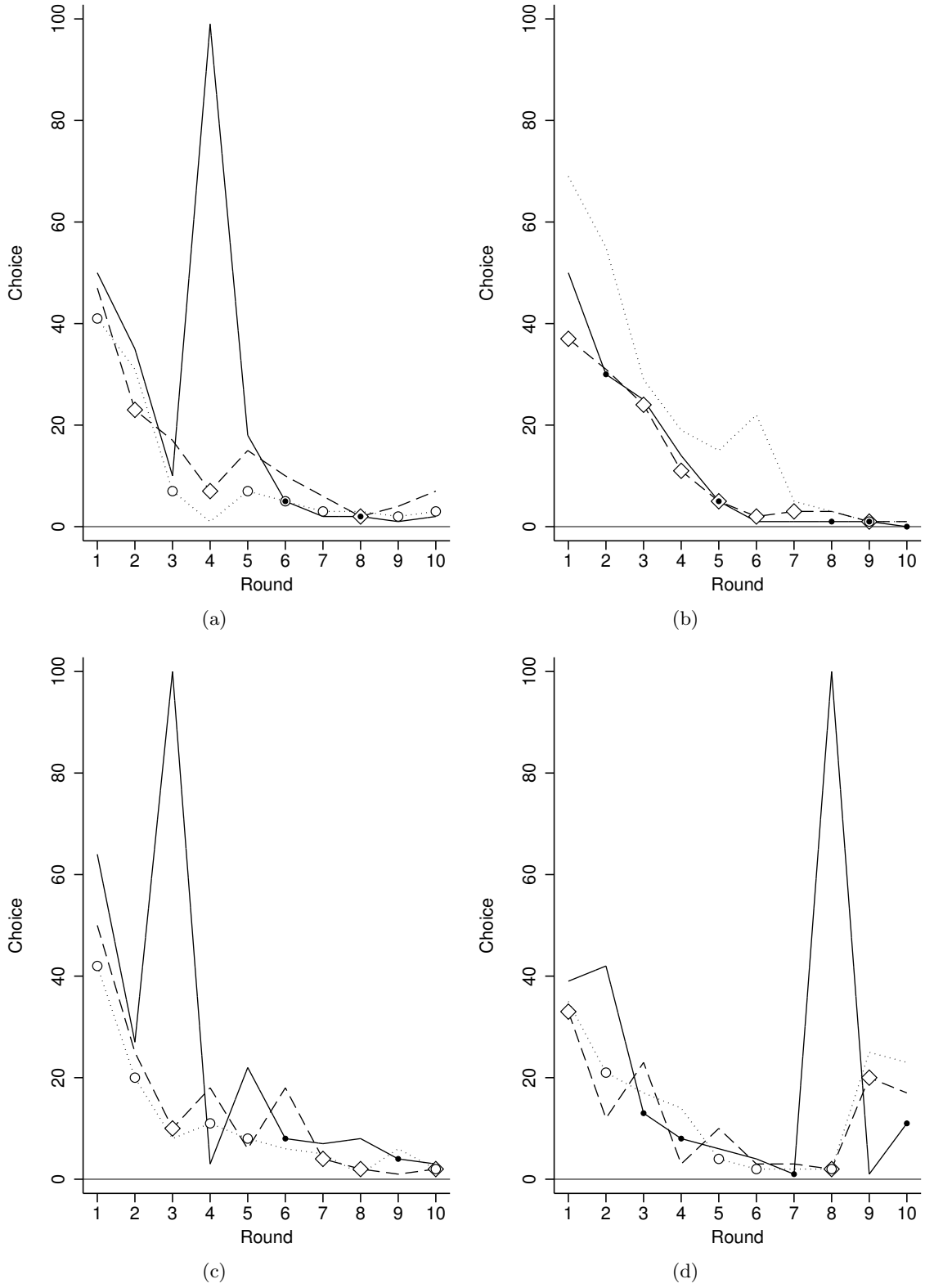
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 37: Group-by-group behavior: cross-matched groups with 1 high ability subject.



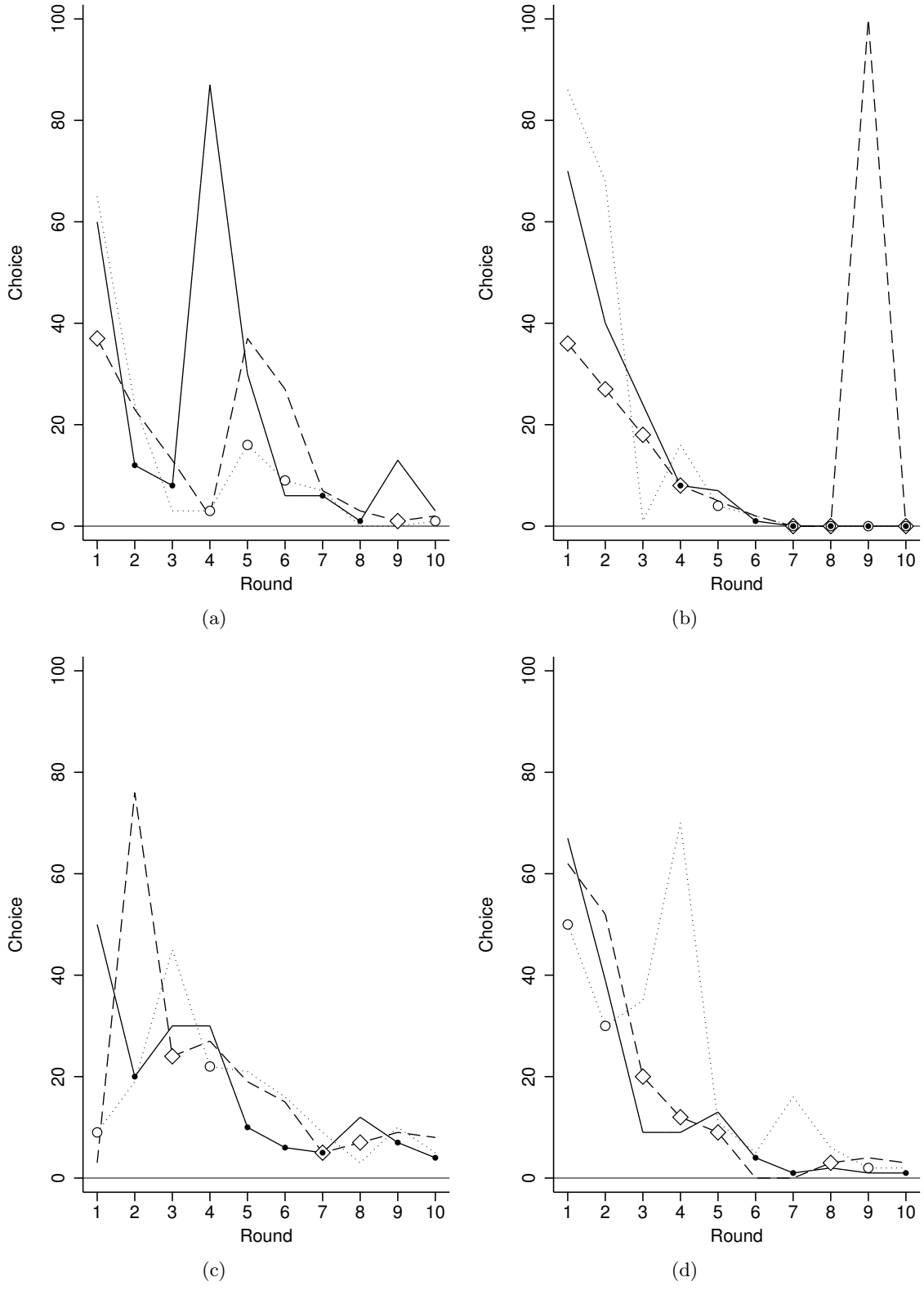
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 38: Group-by-group behavior: cross-matched groups with 1 high ability subject.



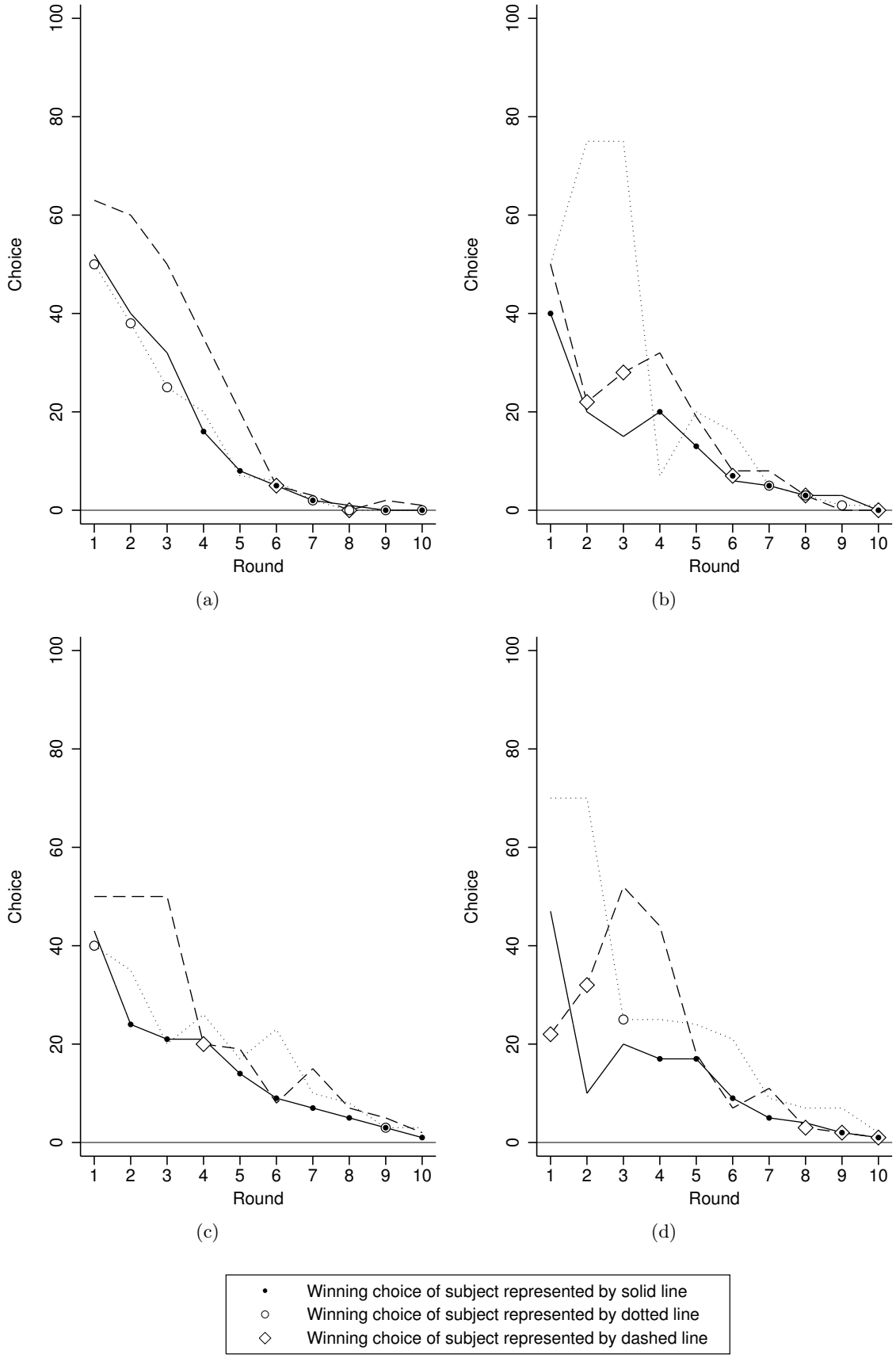
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 39: Group-by-group behavior: cross-matched groups with 1 high ability subject.



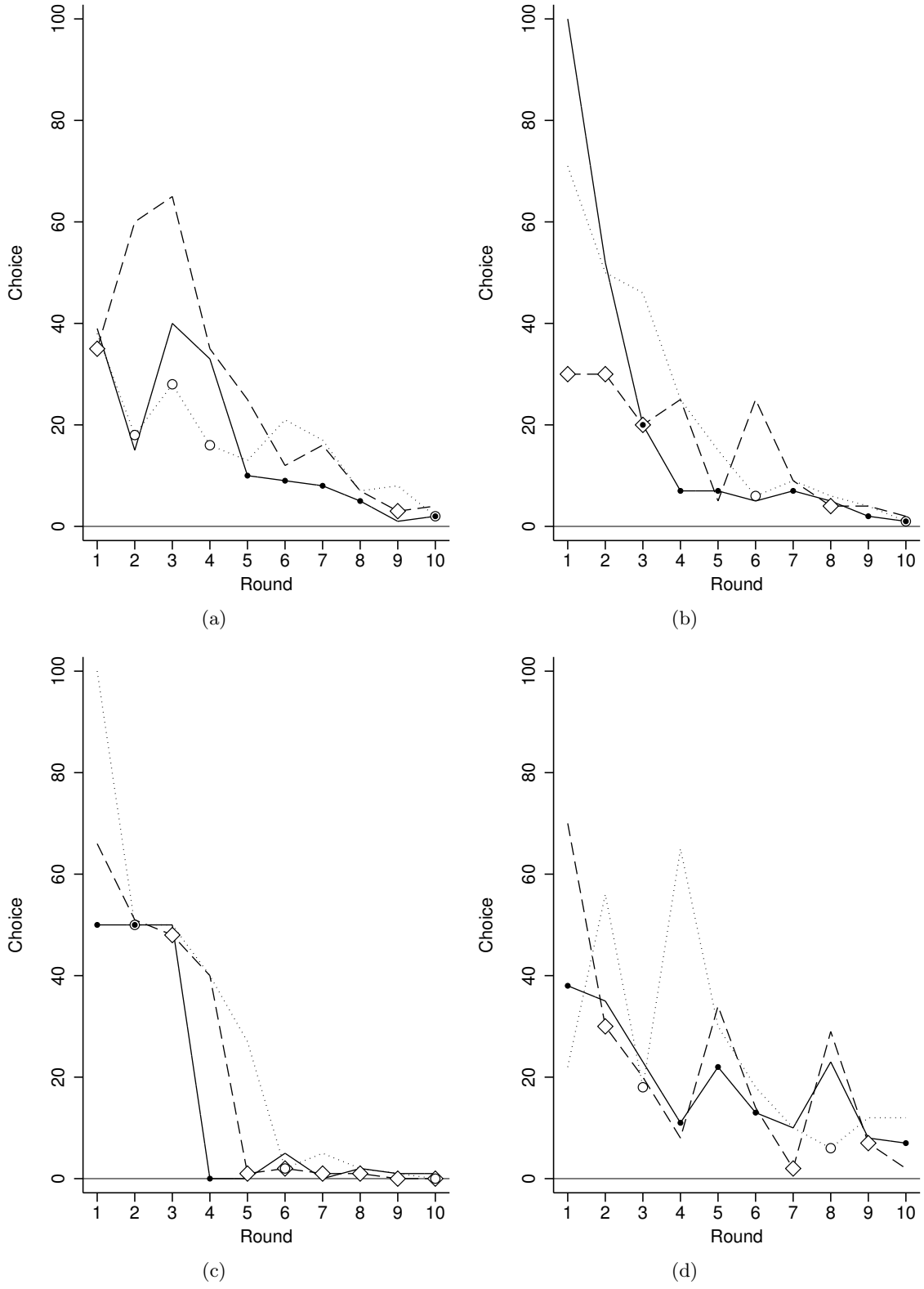
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 40: Group-by-group behavior: cross-matched groups with 1 high ability subject.



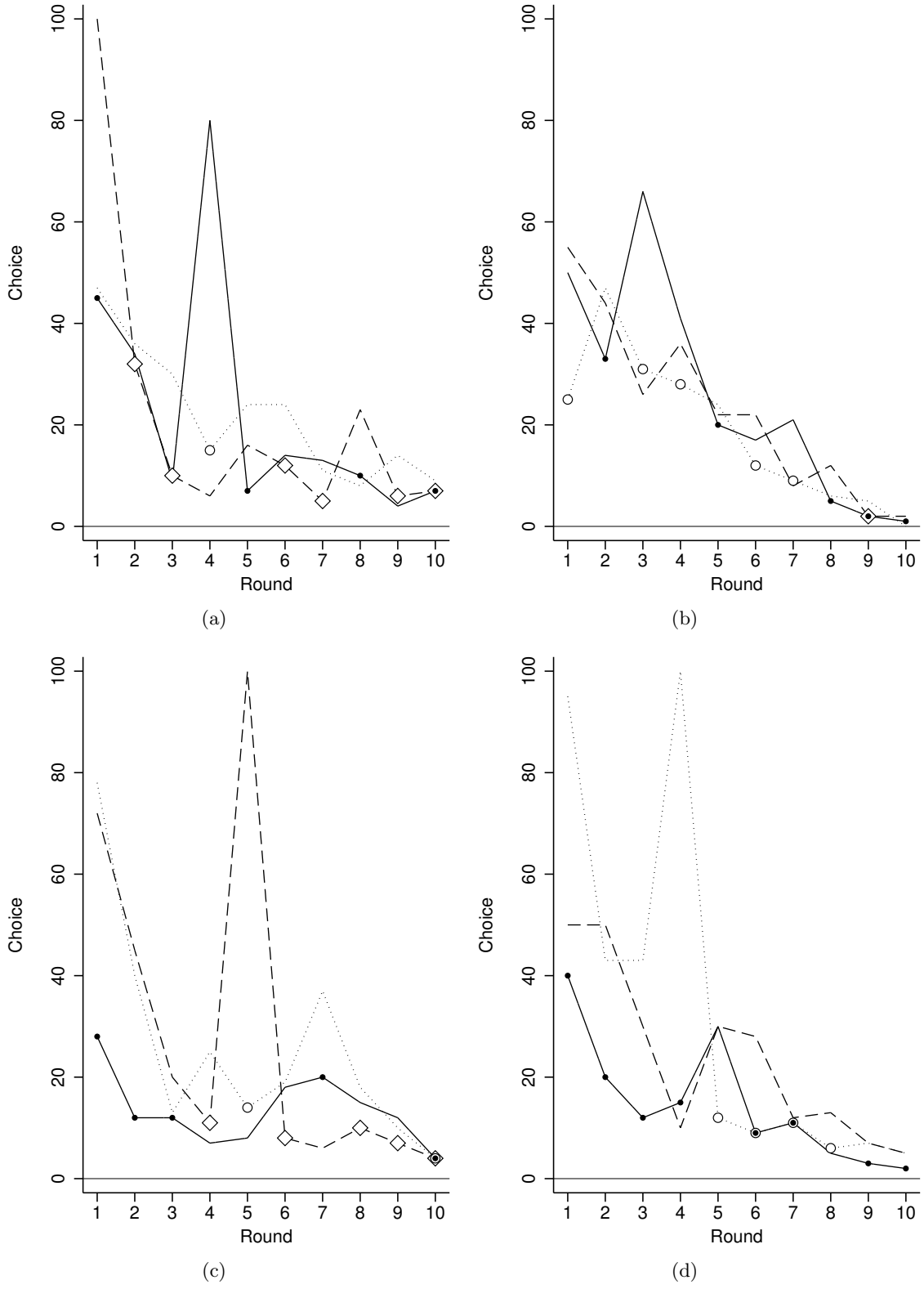
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 41: Group-by-group behavior: cross-matched groups with 1 high ability subject.



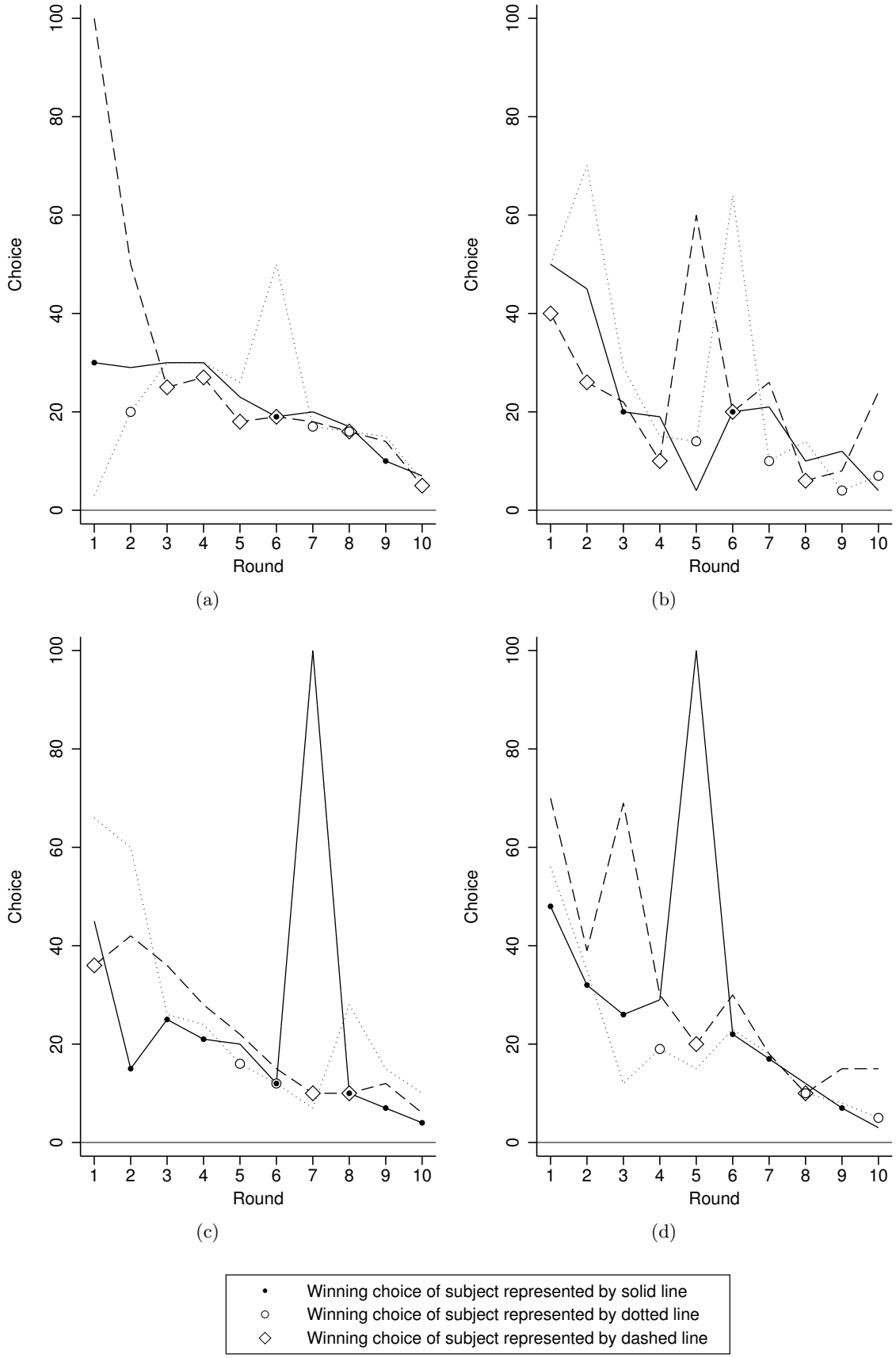
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 42: Group-by-group behavior: cross-matched groups with 1 high ability subject.



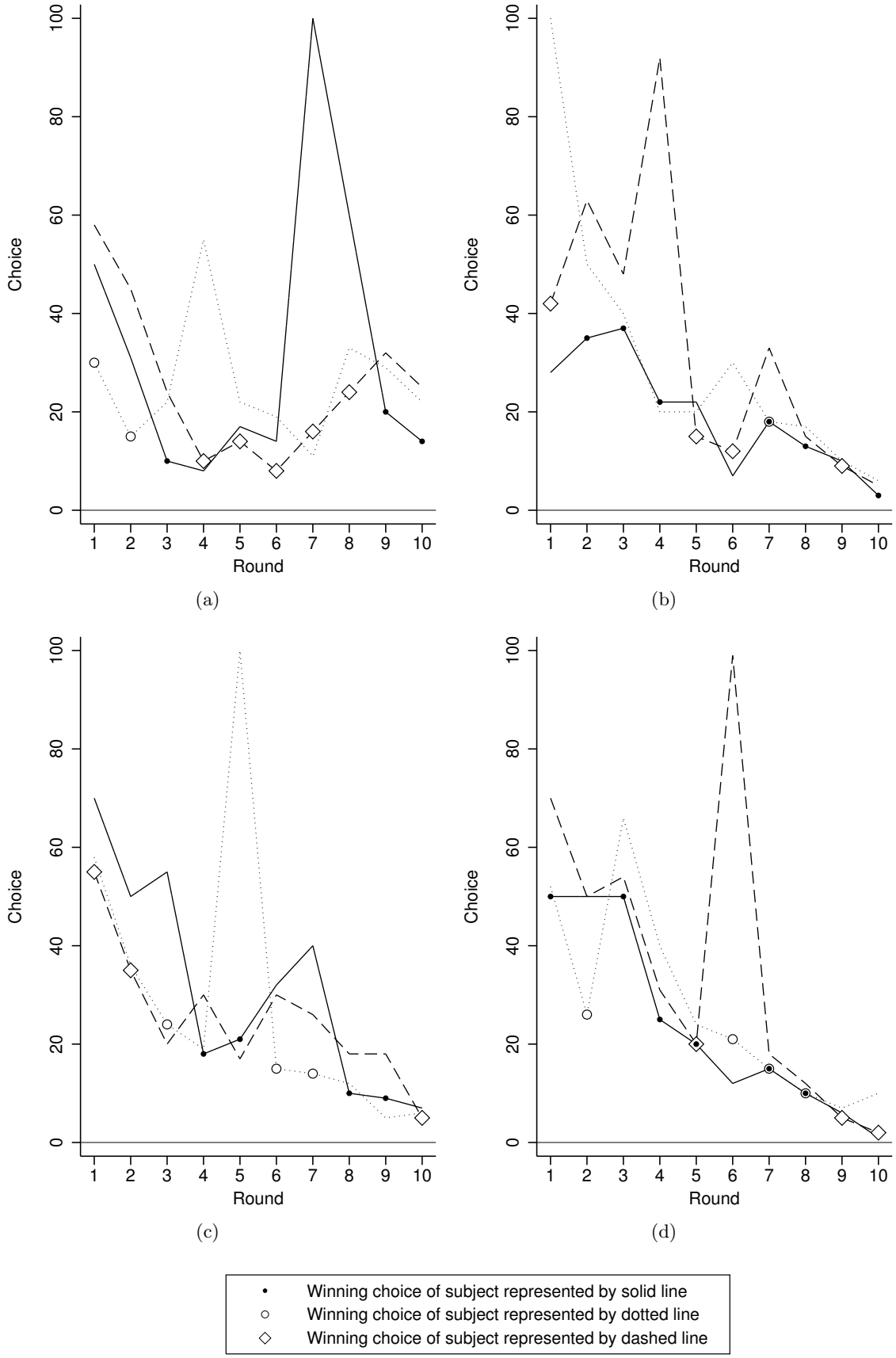
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 43: Group-by-group behavior: cross-matched groups with 1 high ability subject.



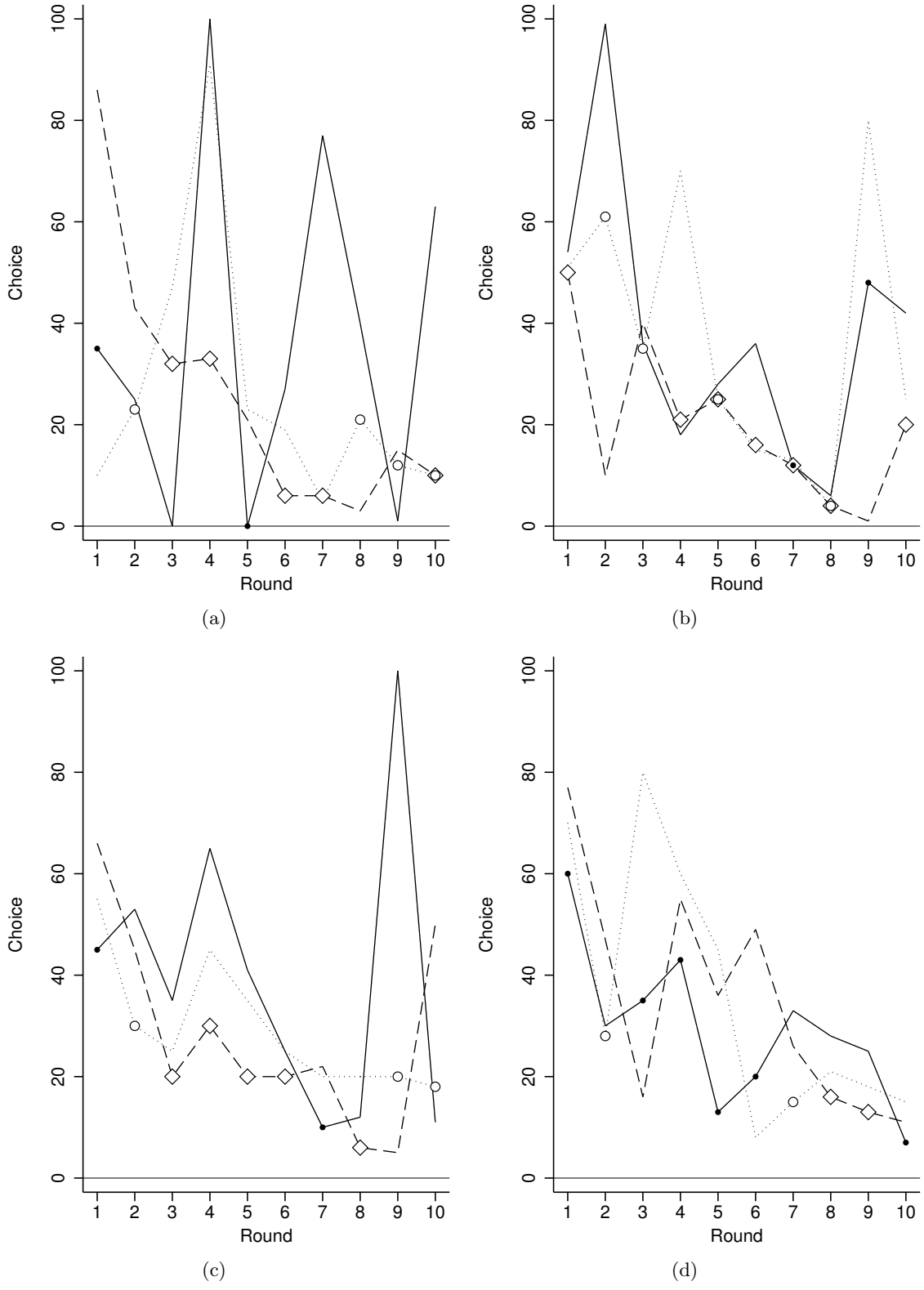
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 44: Group-by-group behavior: cross-matched groups with 1 high ability subject.



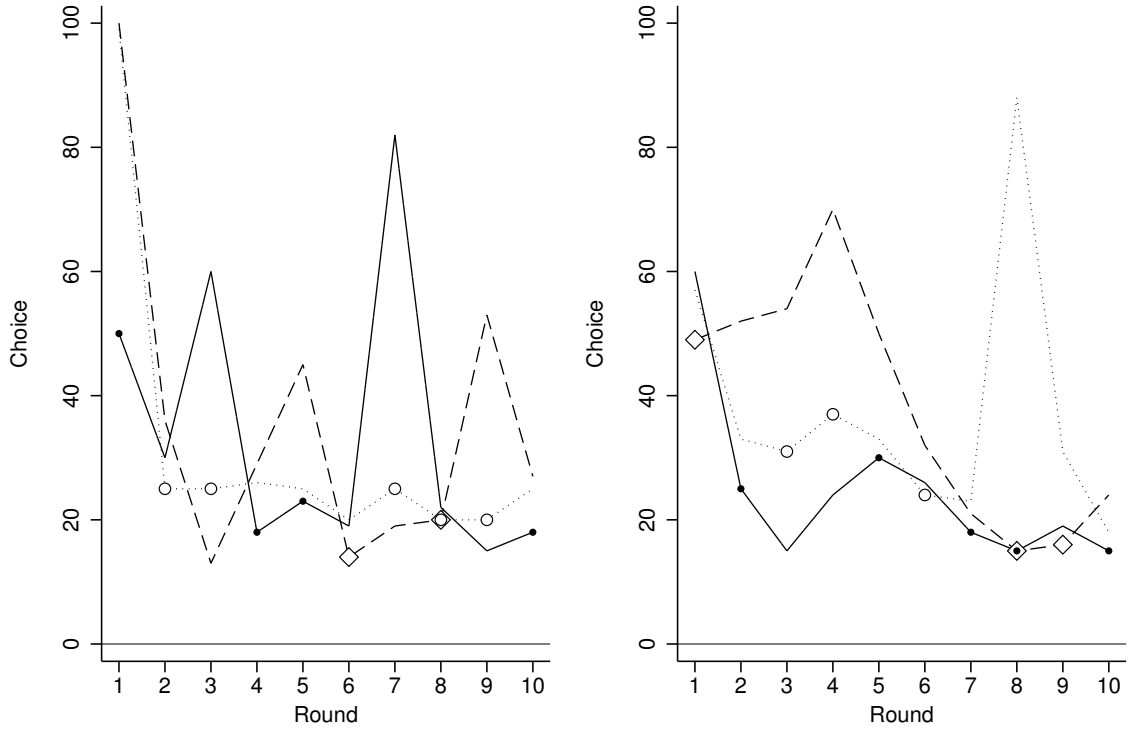
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 45: Group-by-group behavior: cross-matched groups with 1 high ability subject.



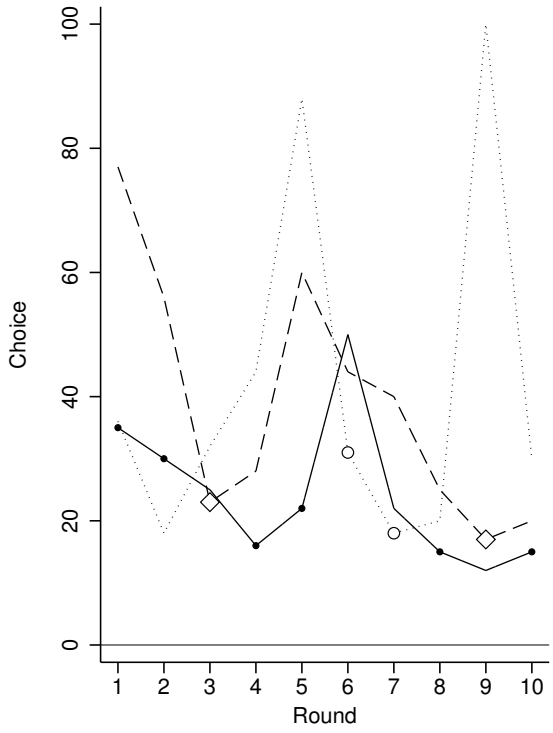
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 46: Group-by-group behavior: cross-matched groups with 1 high ability subject.

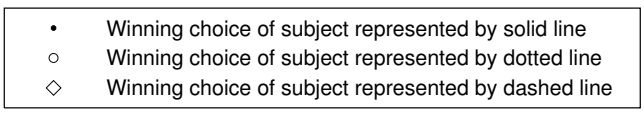


(a)

(b)

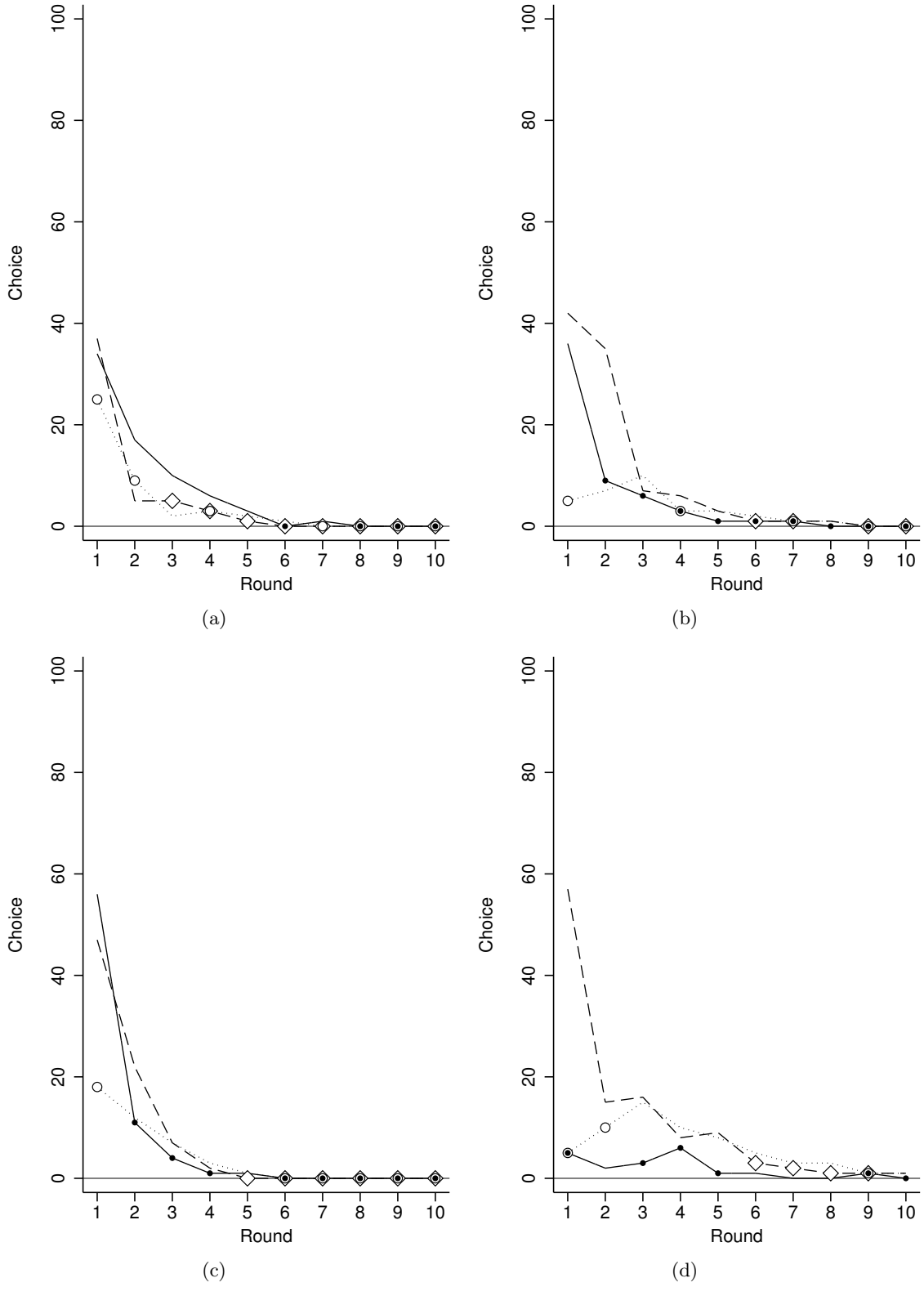


(c)



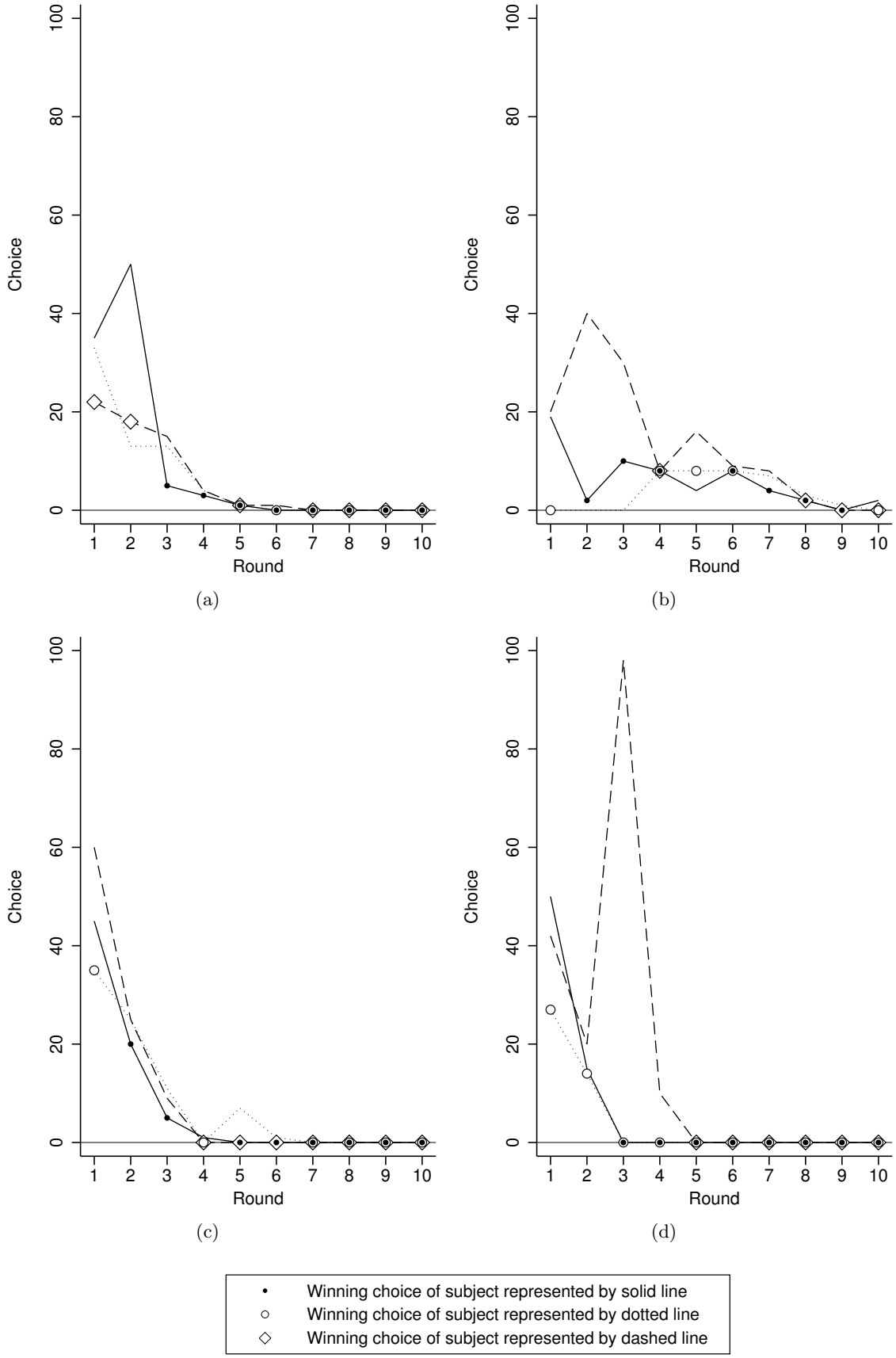
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 47: Group-by-group behavior: cross-matched groups with 1 high ability subject.



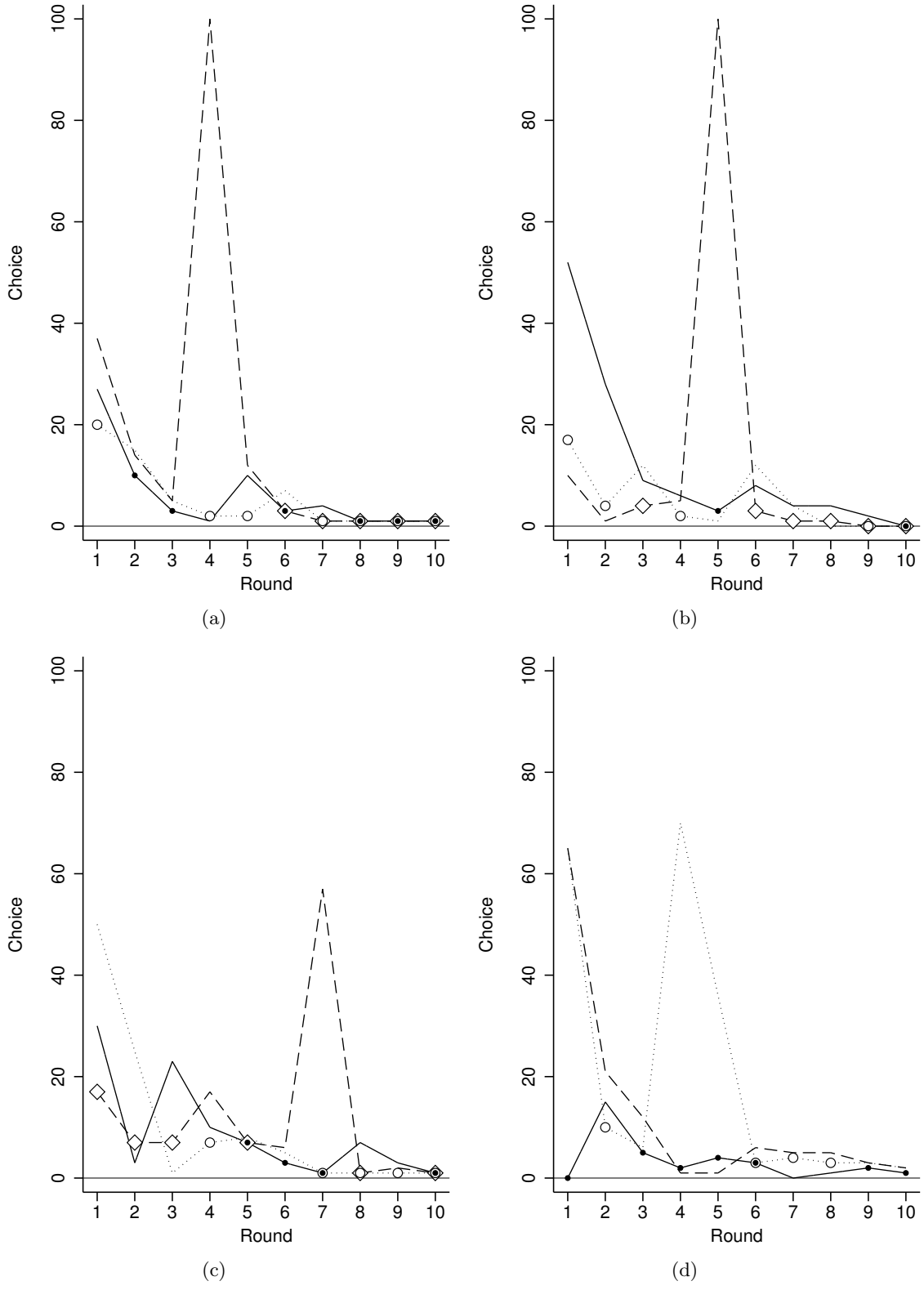
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 48: Group-by-group behavior: own-matched low ability groups.



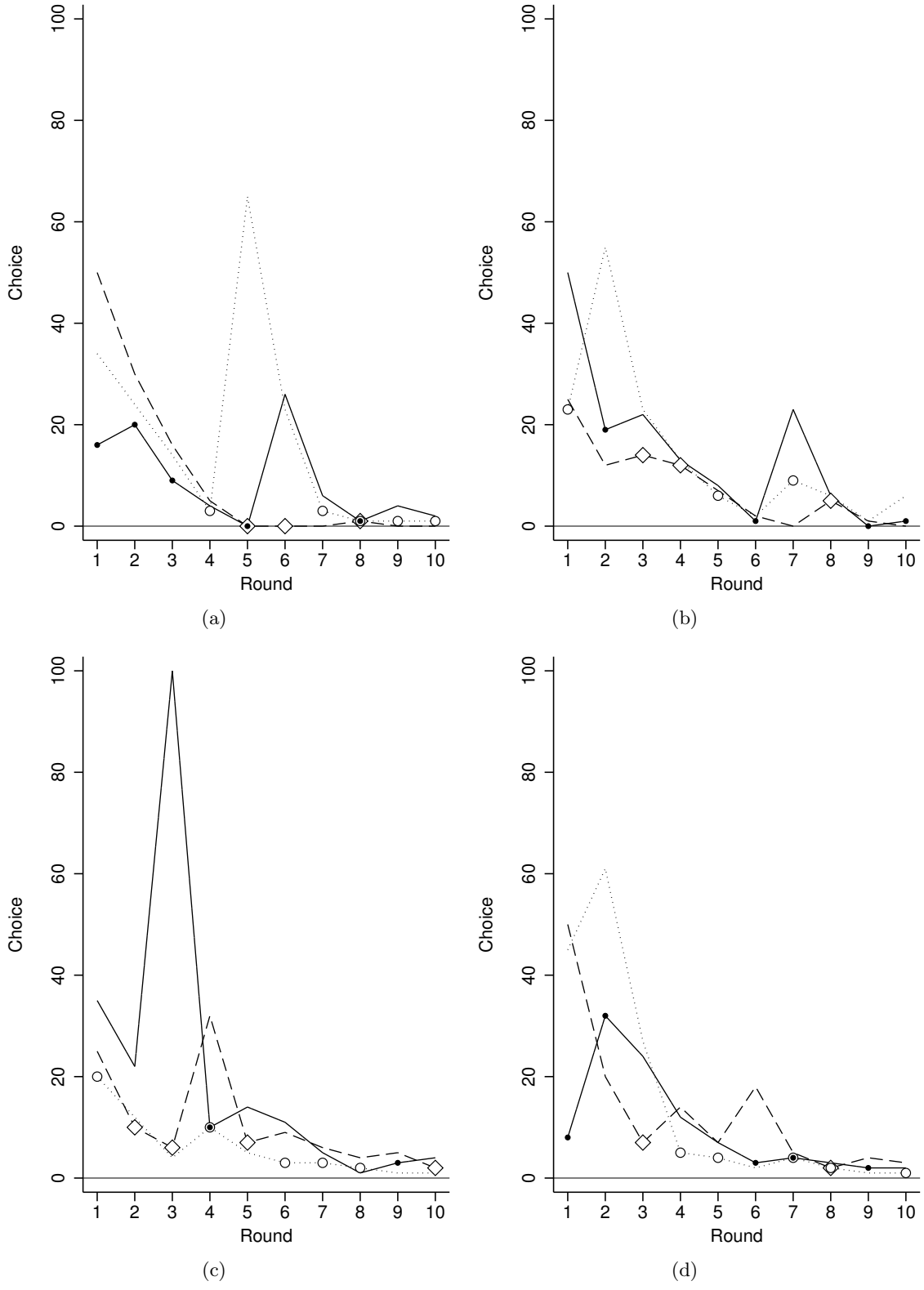
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 49: Group-by-group behavior: own-matched low ability groups.



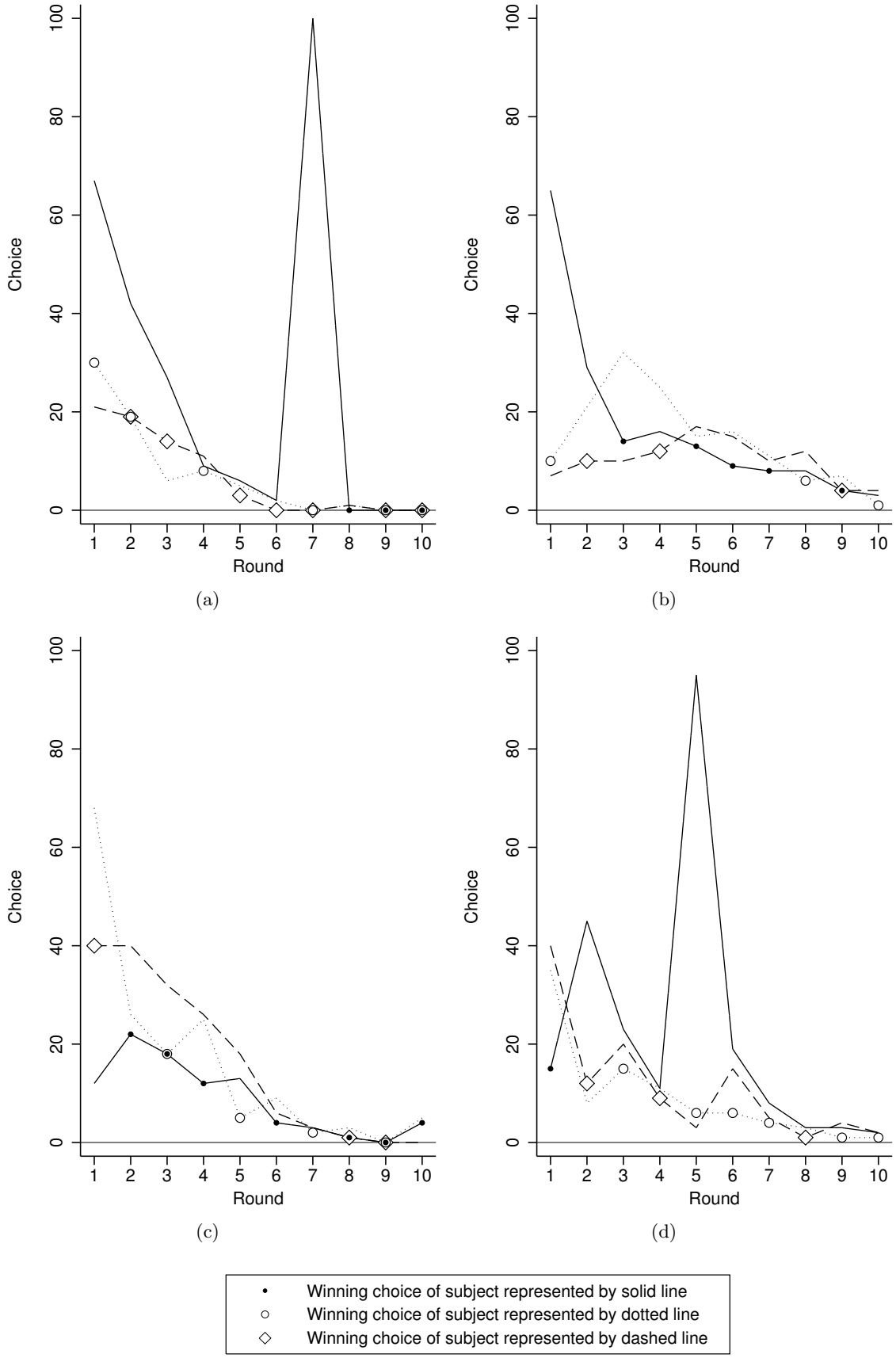
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 50: Group-by-group behavior: own-matched low ability groups.



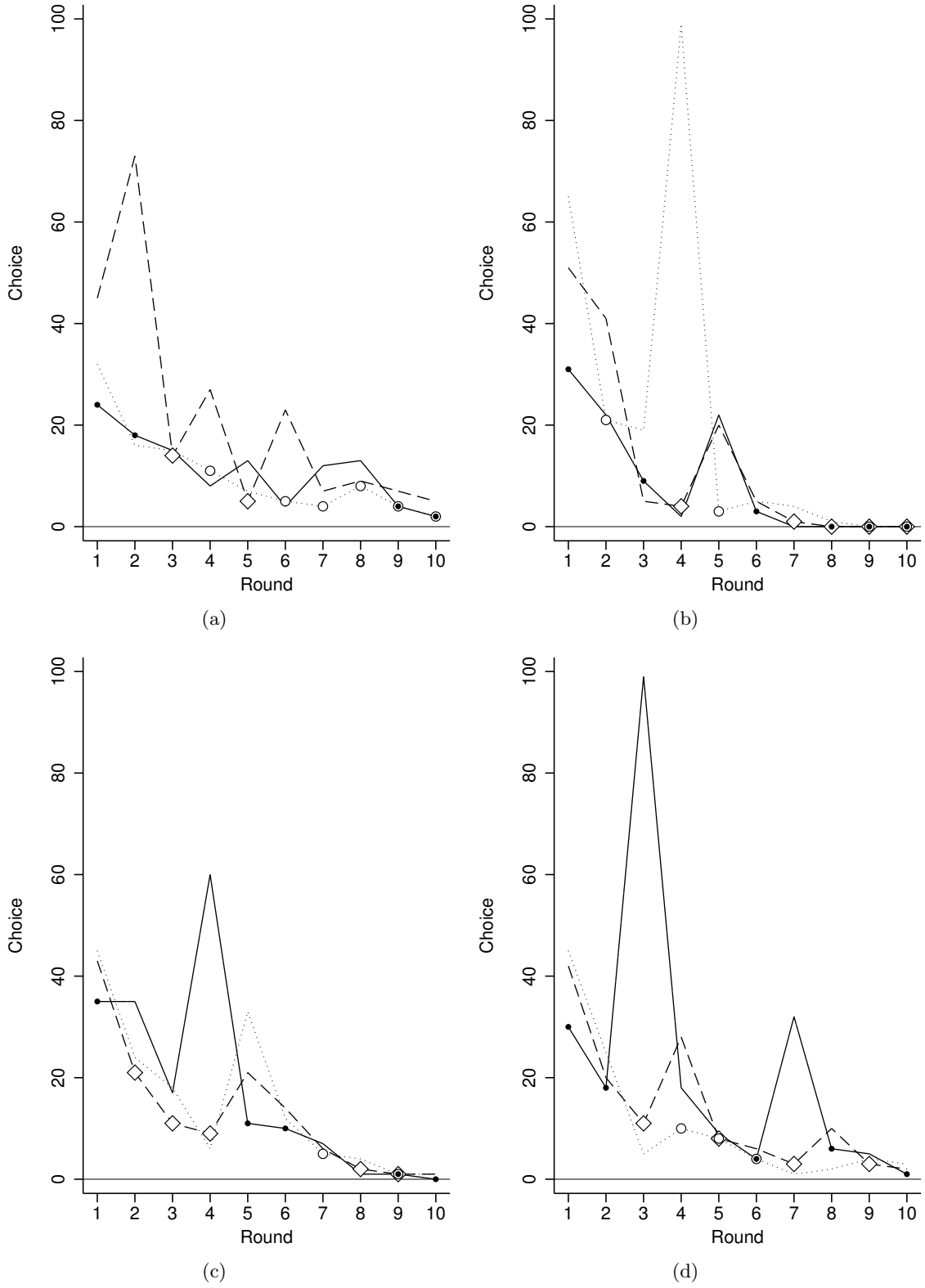
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 51: Group-by-group behavior: own-matched low ability groups.



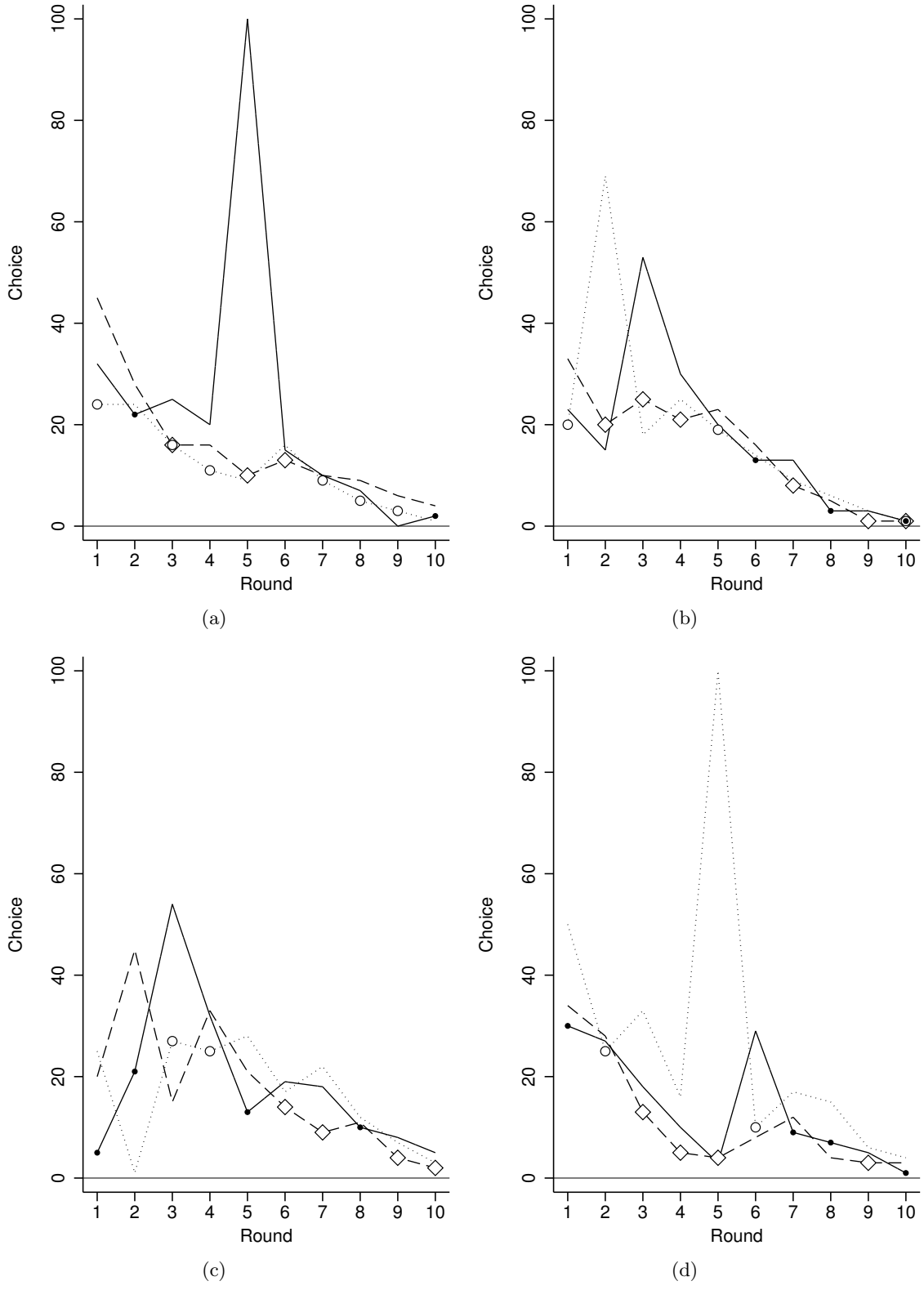
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 52: Group-by-group behavior: own-matched low ability groups.



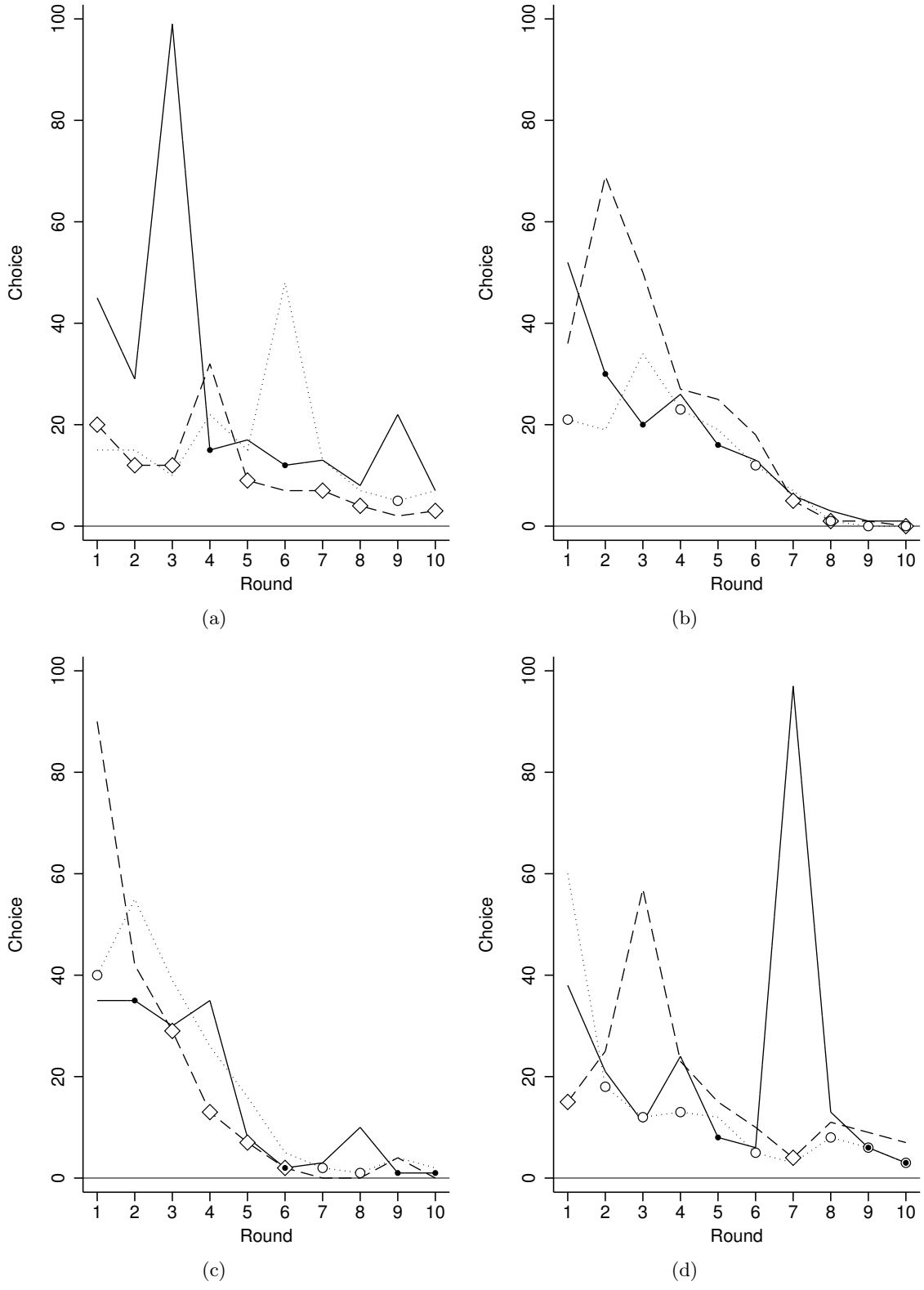
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 53: Group-by-group behavior: own-matched low ability groups.



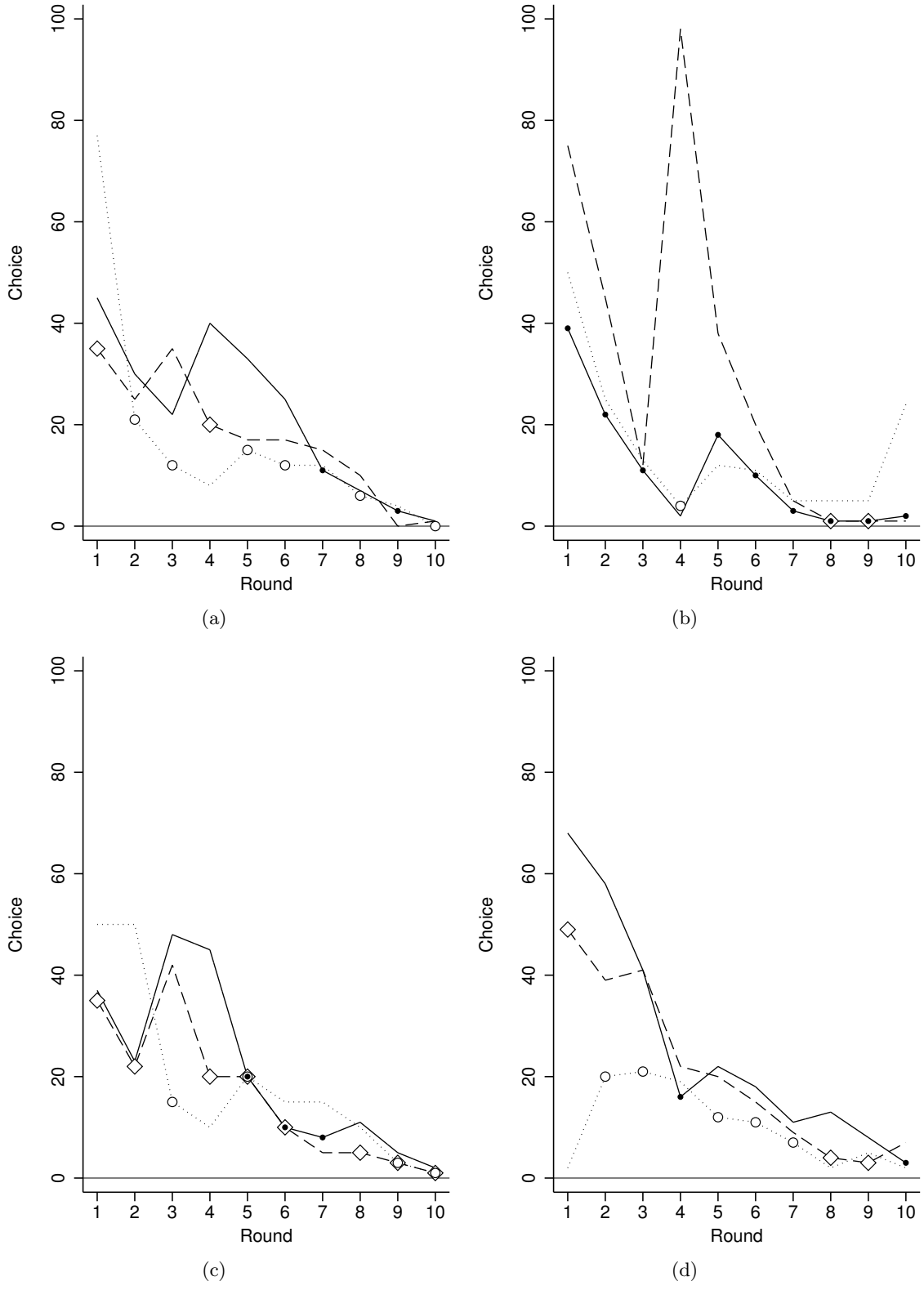
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 54: Group-by-group behavior: own-matched low ability groups.



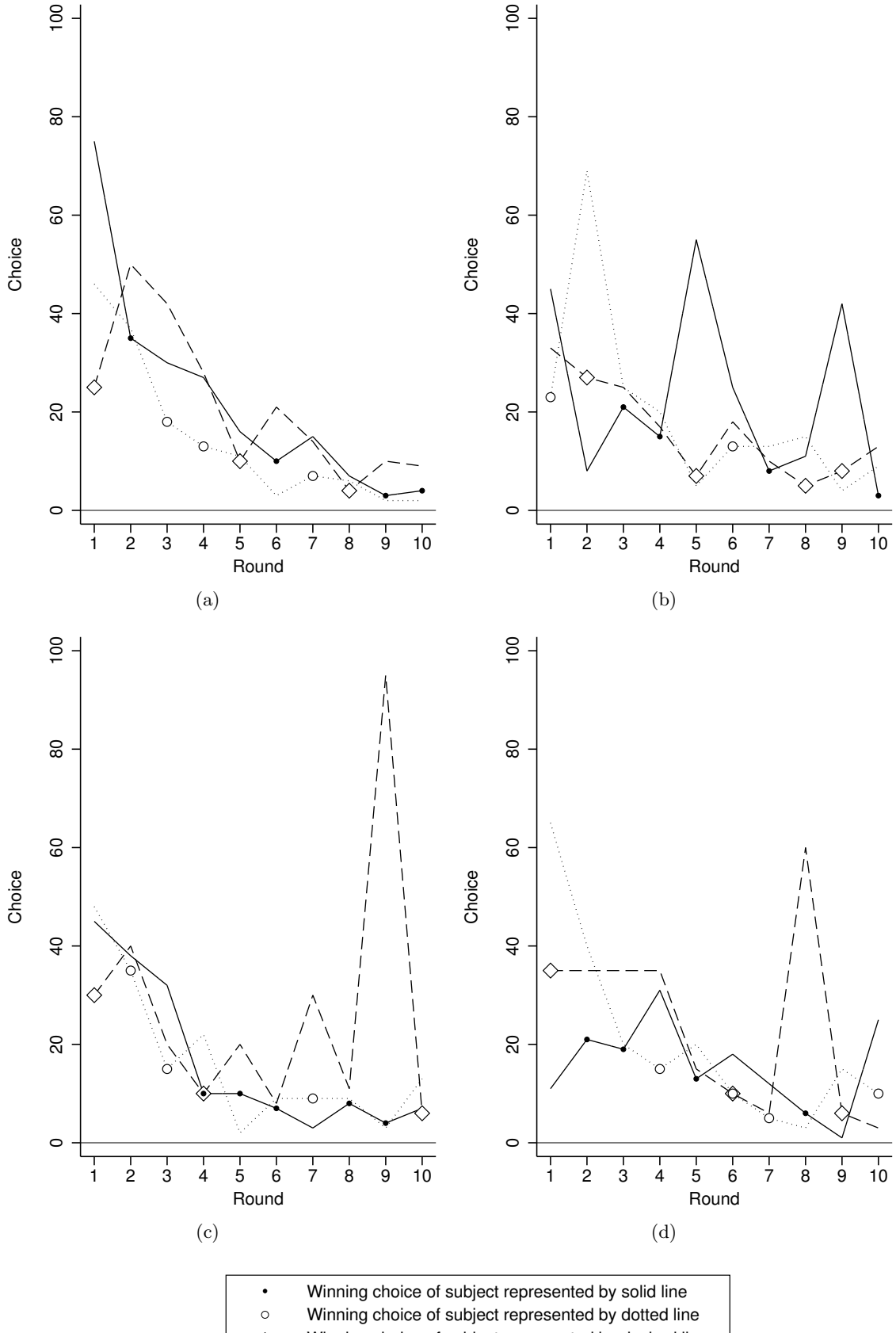
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 55: Group-by-group behavior: own-matched low ability groups.



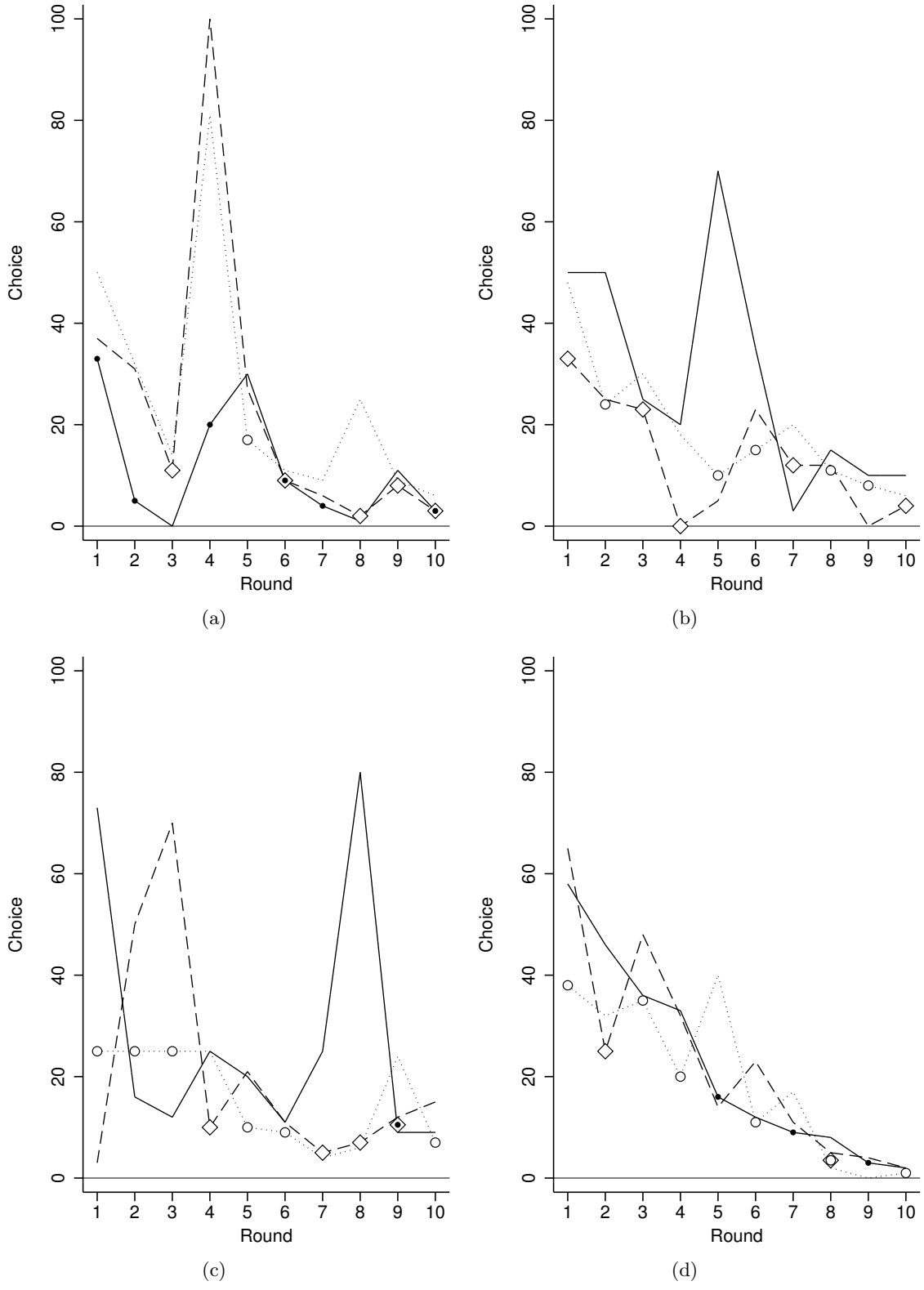
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 56: Group-by-group behavior: own-matched low ability groups.



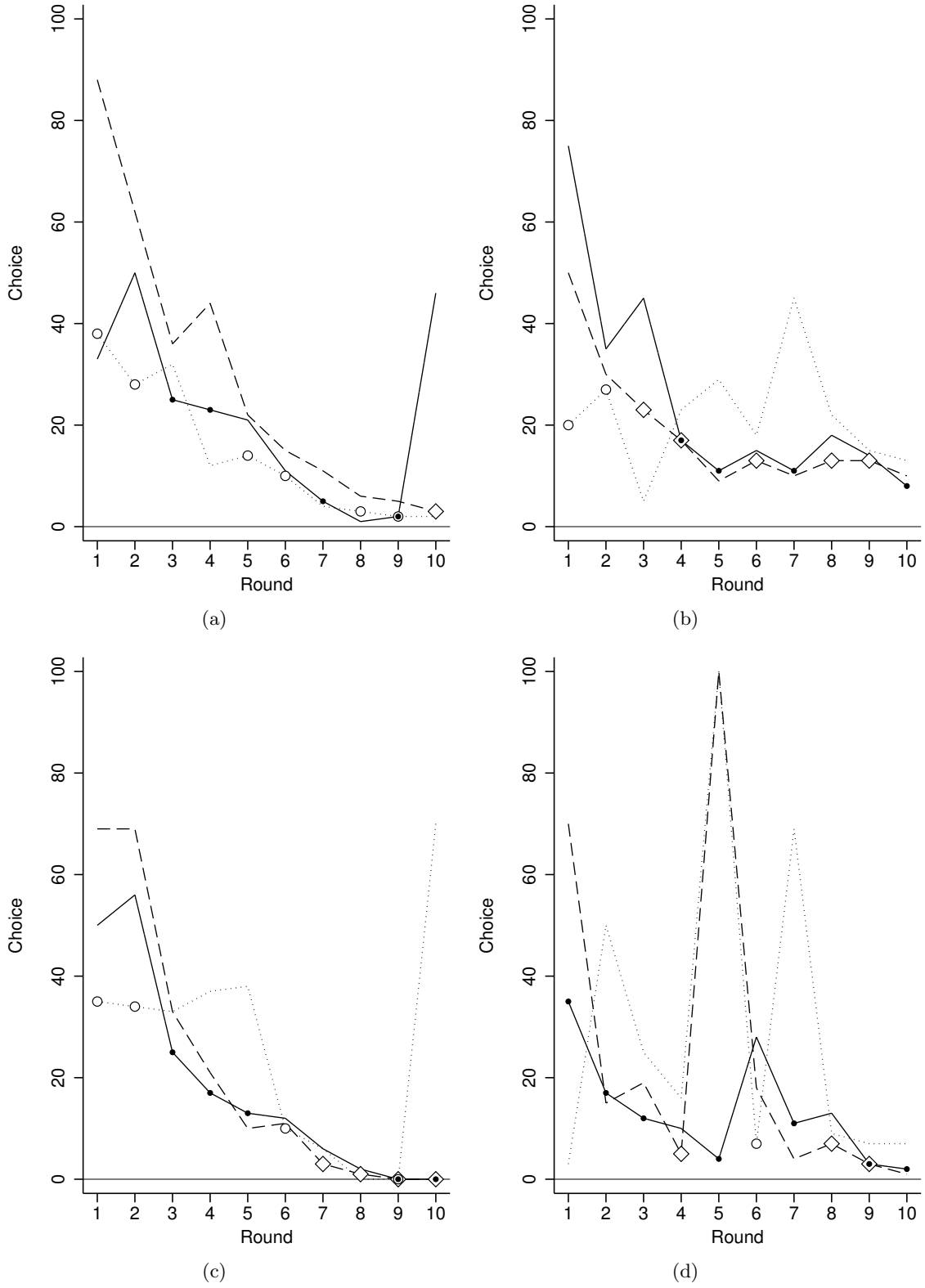
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 57: Group-by-group behavior: own-matched low ability groups.



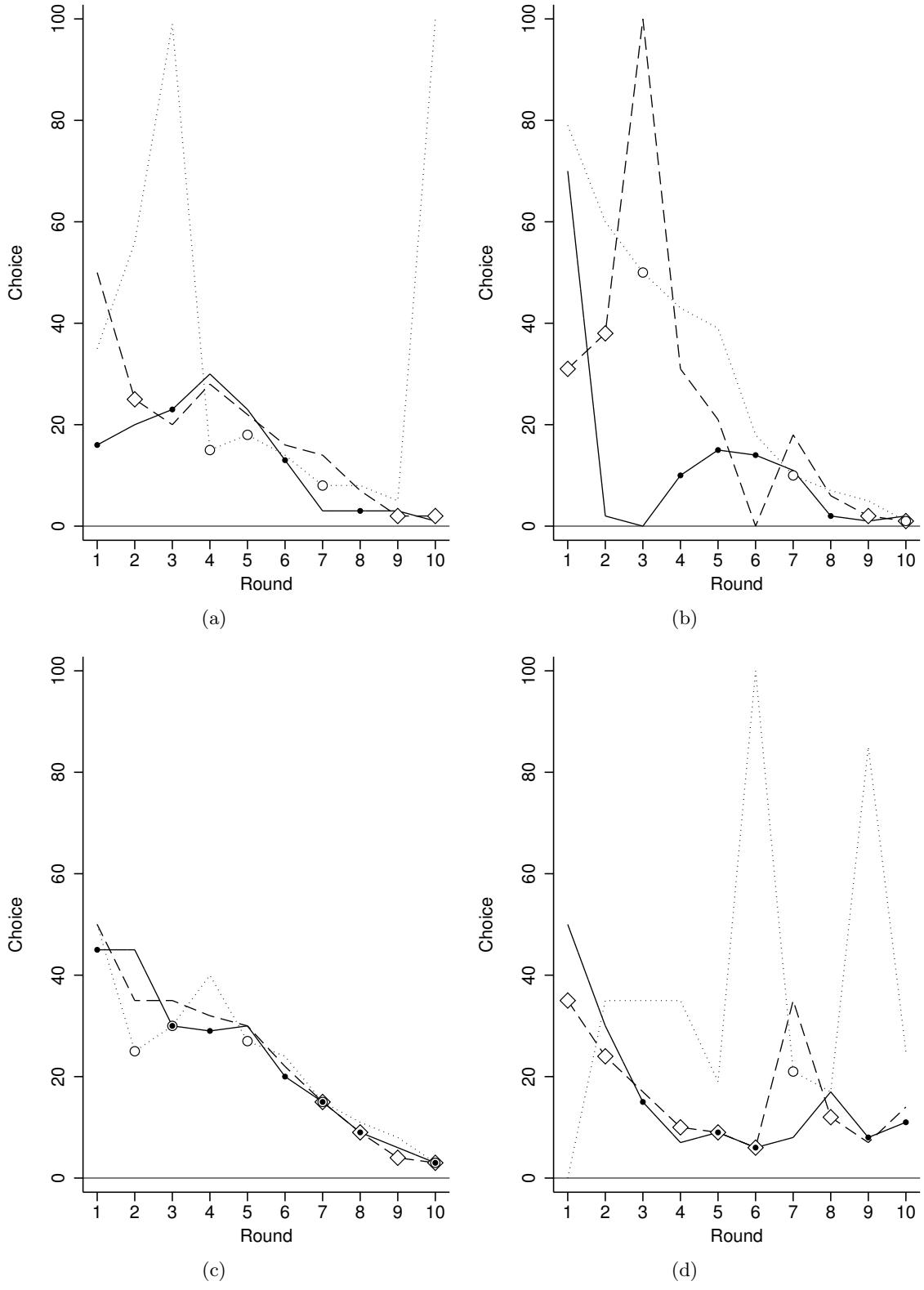
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 58: Group-by-group behavior: own-matched low ability groups.



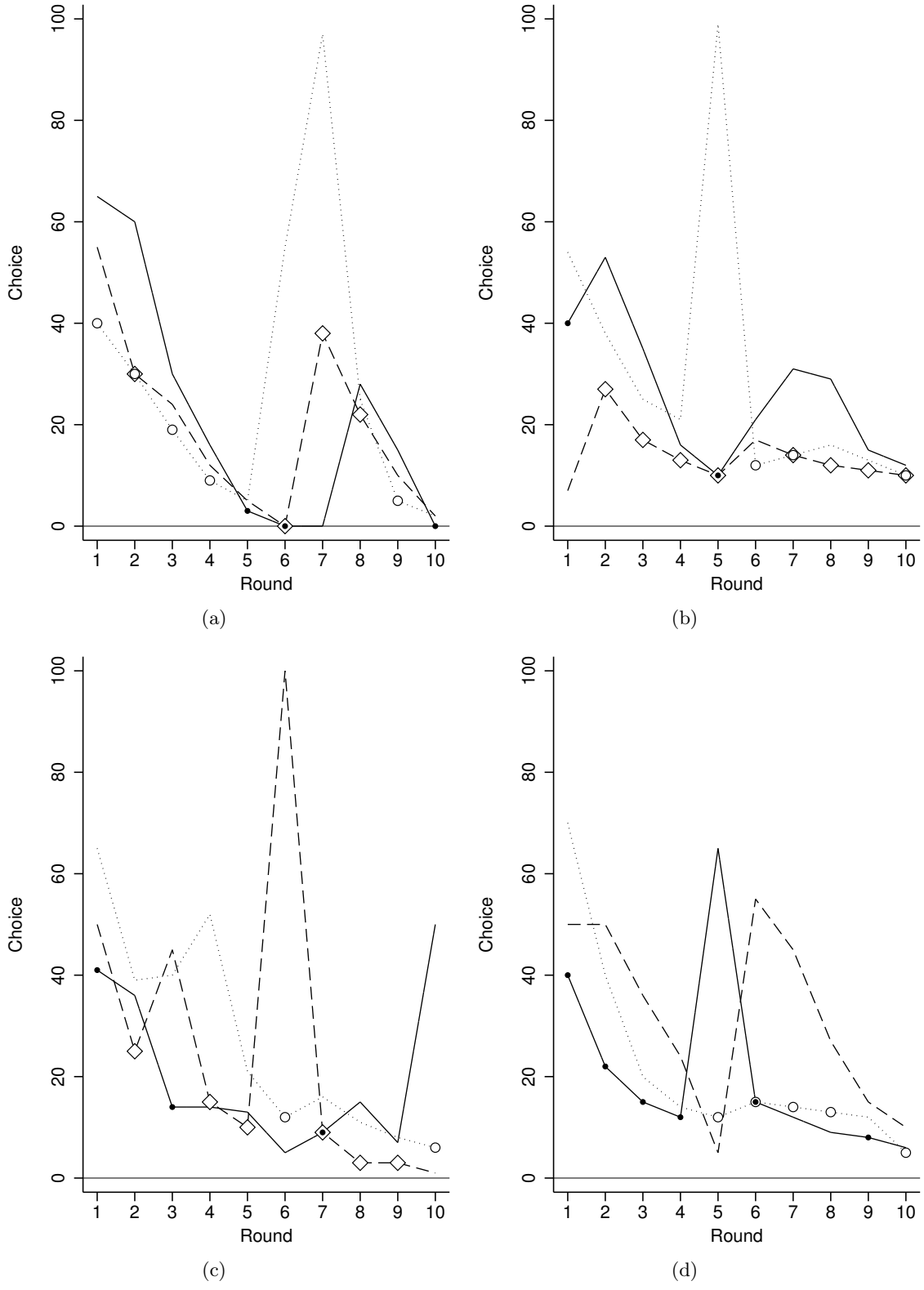
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 59: Group-by-group behavior: own-matched low ability groups.



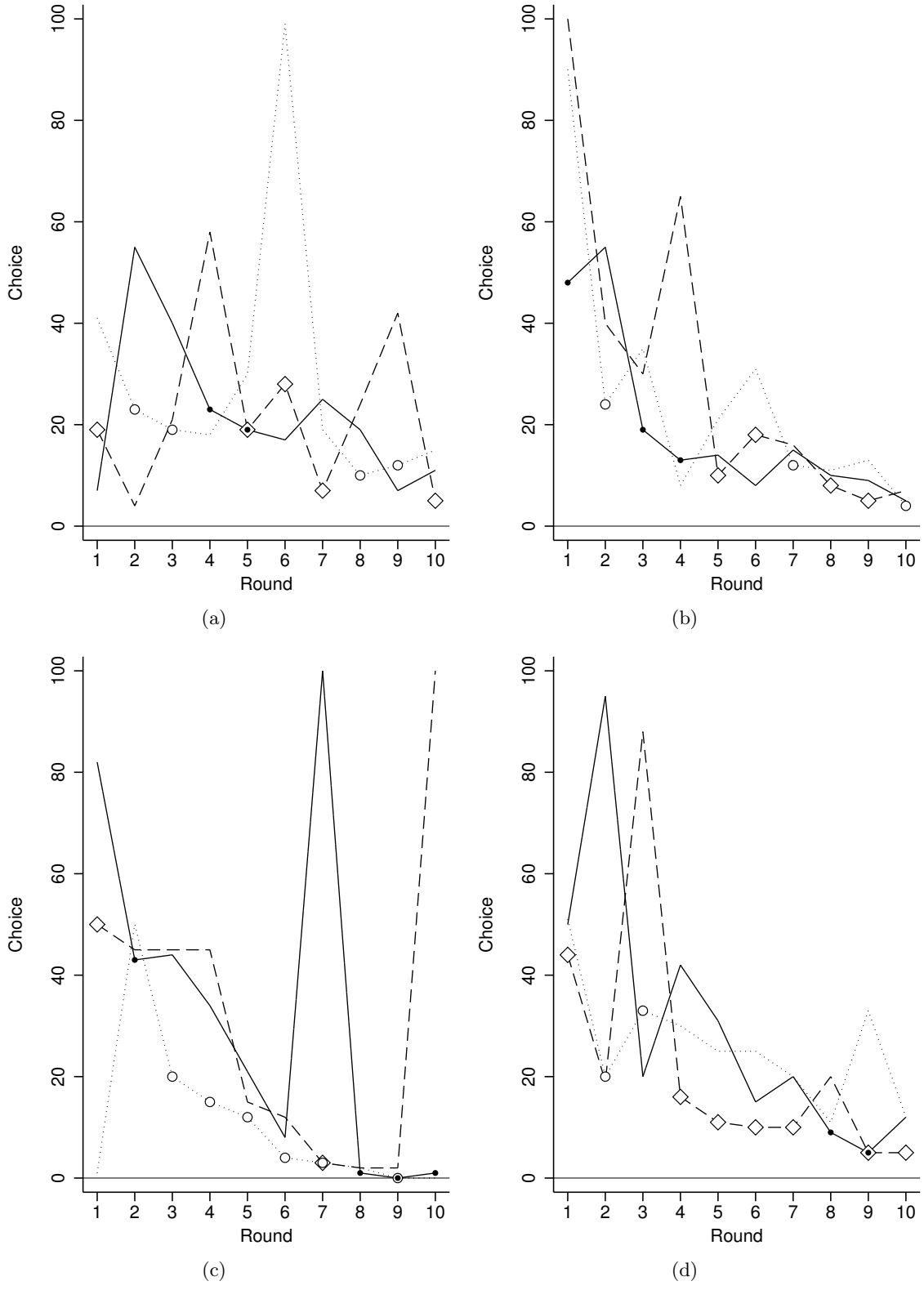
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 60: Group-by-group behavior: own-matched low ability groups.



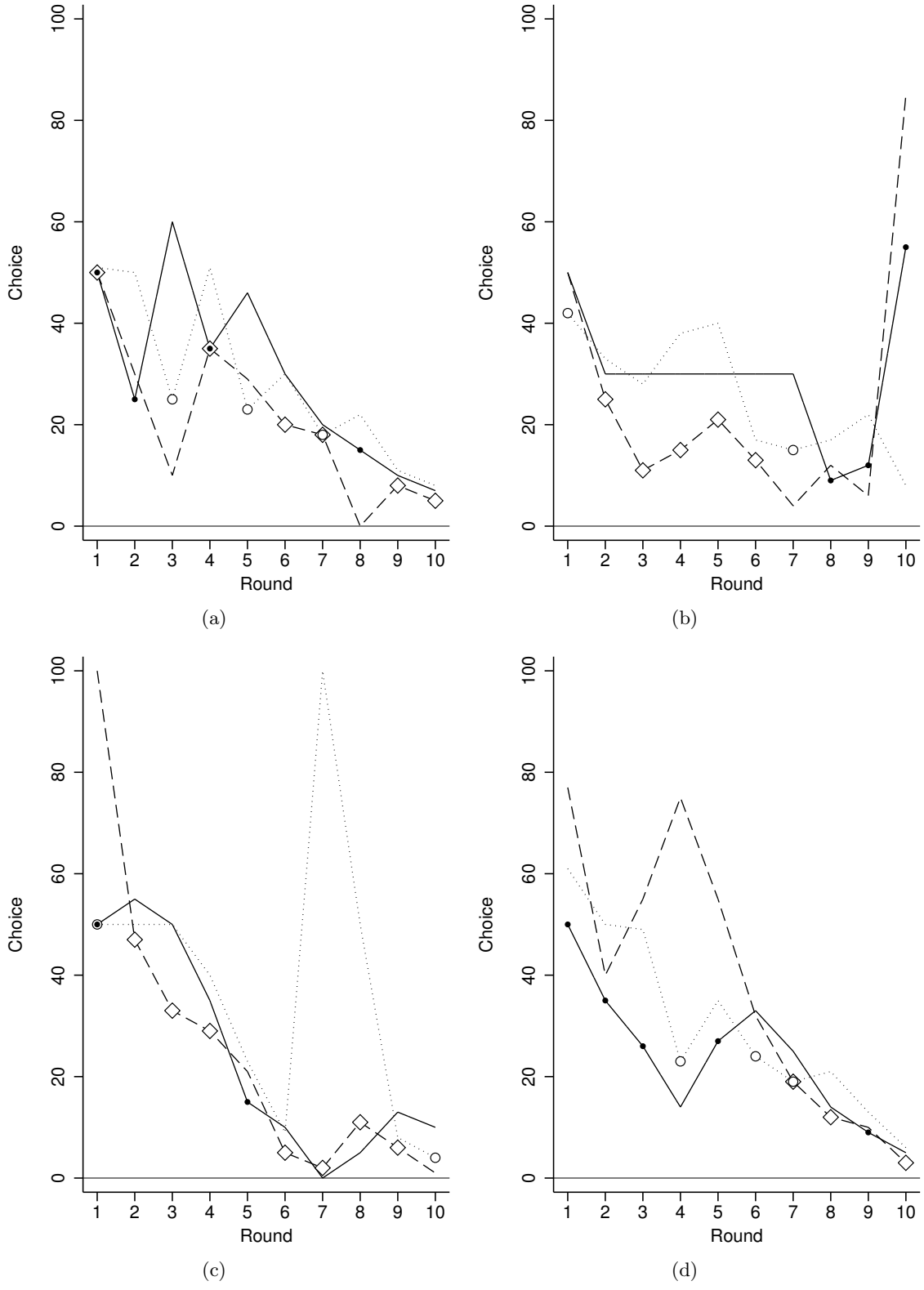
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 61: Group-by-group behavior: own-matched low ability groups.



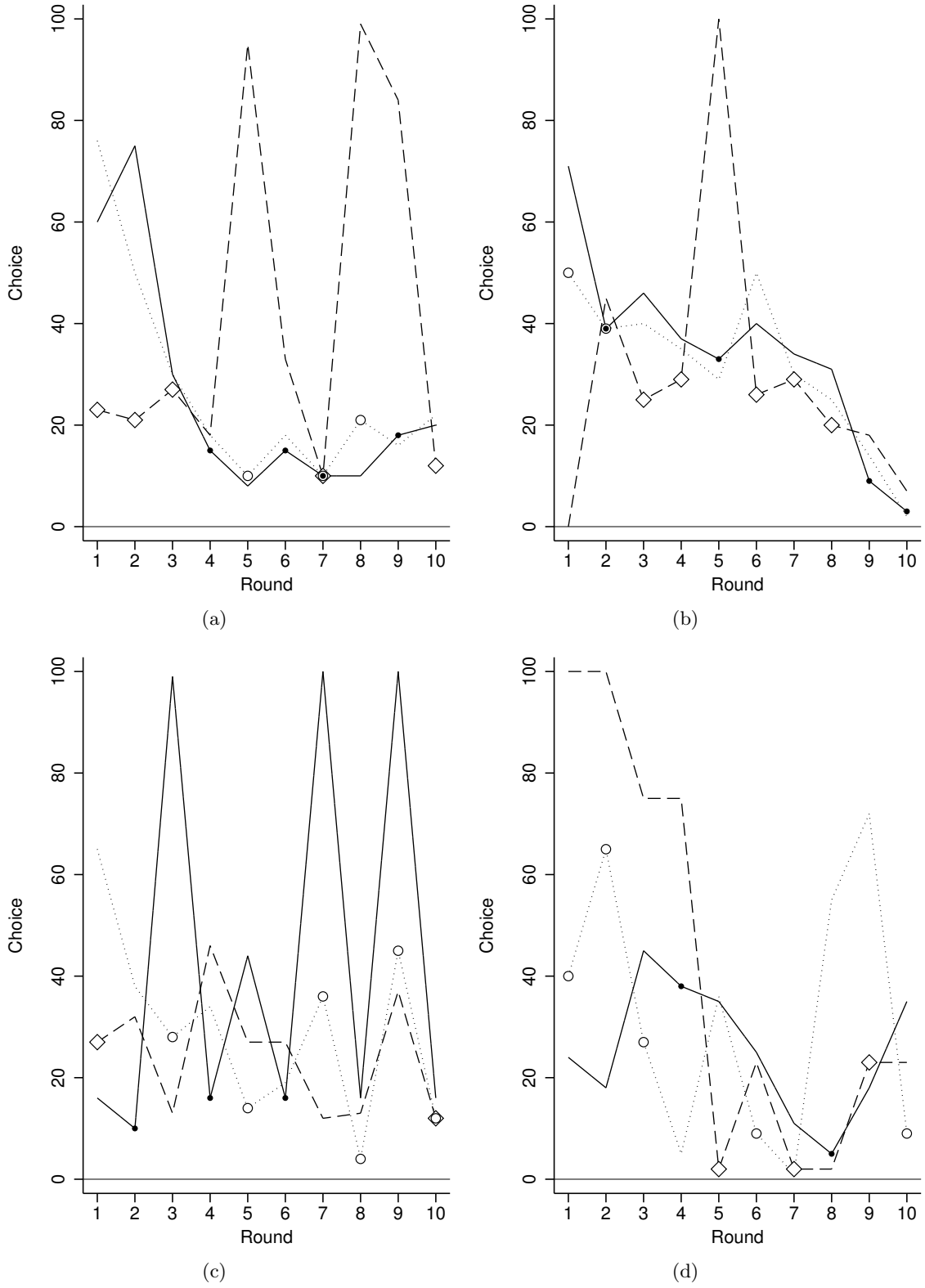
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 62: Group-by-group behavior: own-matched low ability groups.



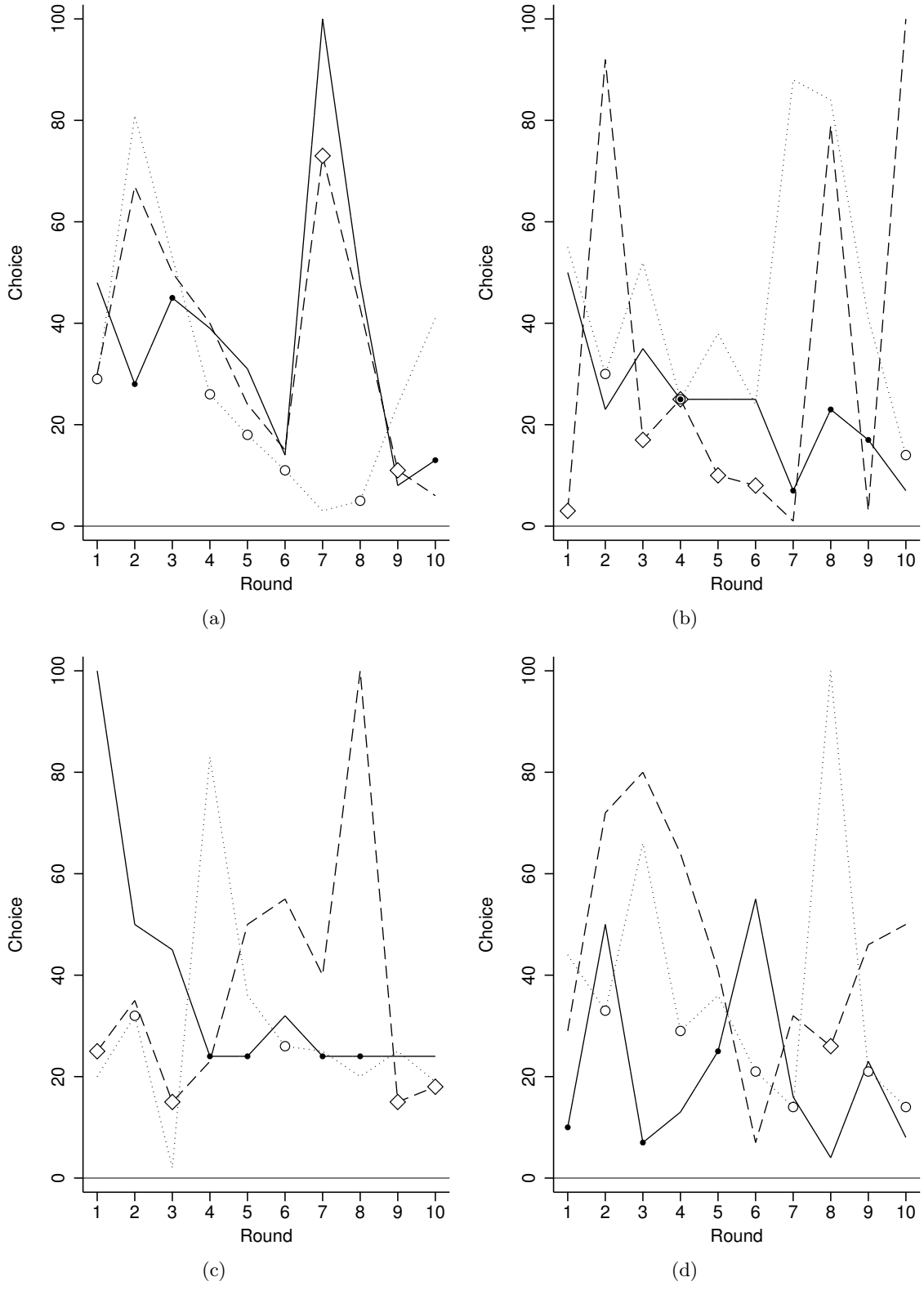
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 63: Group-by-group behavior: own-matched low ability groups.



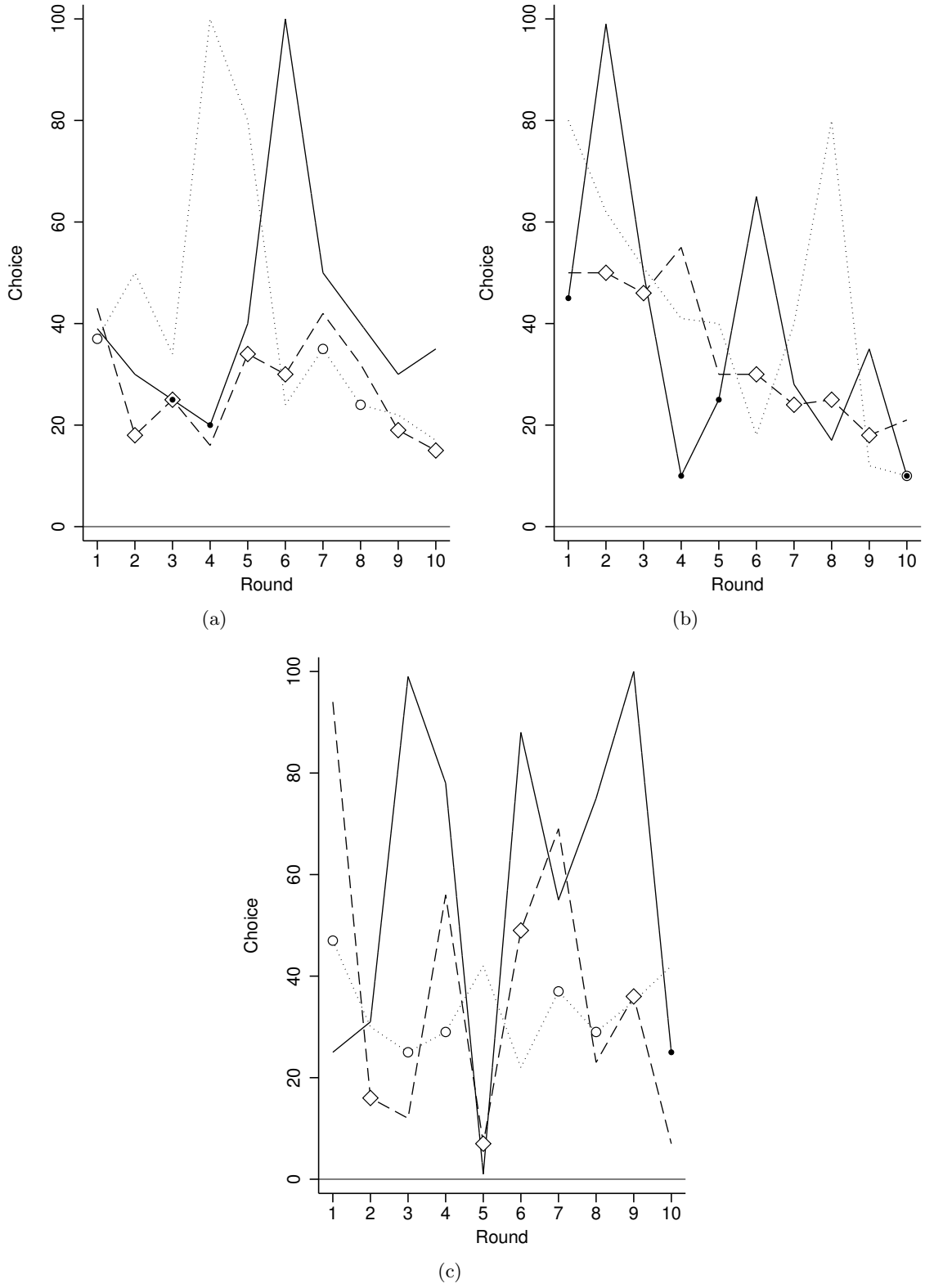
Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 64: Group-by-group behavior: own-matched low ability groups.



Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 65: Group-by-group behavior: own-matched low ability groups.



Notes: Ties are represented by overlapping markers. In cross-matched groups, the subject represented by the solid line is of the minority cognitive ability type.

Figure 66: Group-by-group behavior: own-matched low ability groups.