

1 **Judging romantic interest of others from thin slices is a cross-cultural ability**

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Abstract

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The ability to judge the romantic interest between others is an important aspect of mate choice for species living in social groups. Research has previously shown that humans can do this quickly—observers watching short clips of speed-dating videos can accurately predict the outcomes. Here we extend this work to show that observers from widely varying cultures can judge these same videos with roughly equal accuracy. Participants in the U.S., China, and Germany perform similarly not only overall, but also at the level of judging individual speed-daters: Some daters are easy to read by observers from all cultures, while others are consistently difficult. These cross-cultural performance similarities provide evidence for an adaptive mechanism useful for mate choice that could be resilient to cultural differences.

31 1. *Introduction*

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33 The ability to judge romantic interest between others is an important adaptive skill, as it  
34 allows us to learn about the structure of our social environment (Pentland, 2007) and the  
35 availability and desirability of potential future mates (Simão & Todd, 2002). Research has  
36 previously shown that U.S. college students possess this ability (Place, Todd, Penke, &  
37 Asendorpf, 2009), by having them watch video clips of German speed-daters and predict  
38 whether the daters will indicate romantic interest in each other. But are there cultural differences  
39 in this ability? Would Germans judge dating behavior in their own culture more accurately than  
40 Americans, or Chinese? There is considerable variety in courtship patterns and relationship  
41 styles across cultures (Broude, 1983; Hamon & Ingoldsby, 2003; Schmitt et al., 2004), and even  
42 in non-verbal flirtatious body motions of eastern and western daters (Grammer, Honda, Juetten, &  
43 Schmitt, 1999). While individuals should be good at judging romantic interest *within* their own  
44 culture, this ability might not generalize to judging people from *other* cultures (Henrich, Heine,  
45 & Norenzayan, 2010). On the other hand, low-level perceptual and cognitive components  
46 necessary for making these judgments have been shown to function cross-culturally, with  
47 previous studies among multiple developed countries showing similarities in perceiving facial  
48 emotions (Ekman et al., 1987), judging personality in zero-acquaintance situations (Albright et  
49 al., 1997), and ranking mate choice preferences (Buss, 1989). An ability to decipher romantic  
50 interest even between people from other cultures would be evidence for the display and  
51 understanding of a common set of cues indicative of human romantic interest that might be  
52 resilient to changeable and possibly transient cultural differences.

53 To test for the presence of such cues, we added participants from two populations,  
54 Germany and China, to the original U.S. sample, and had them watch and make predictions  
55 about the German speed-daters. We presented observers with 10-second video clips from the  
56 middle of each speed-date instead of showing them the entire 3 minute interaction. Previous  
57 work has shown that thin slices of behavior as short as 10 seconds are long enough to reliably  
58 judge not only romantic interest (Place, et al., 2009), but also a wide variety of other personality  
59 and individual attributes (Ambady & Rosenthal, 1992, 1993). Moreover, the results from the  
60 previously gathered U.S. sample showed that this location and length of video clips yielded the  
61 highest overall accuracy in observer judgments of interest (Place, et al., 2009), and we wanted to  
62 focus on the greatest possible readability across cultures. The videos were presented with sound  
63 to test whether vocal tone and prosody cues, available to all 3 observer samples, versus actual  
64 content, which only the Germans could understand, made for greater accuracy. Non-content  
65 vocal cues contain information that is useful in determining romantic interest (Kucerova et al.,  
66 2011; Madan, Caneel, & Pentland, 2005), such as who is speaking more often, and how long the  
67 gaps are when speakers alternate. Based on previous results showing an advantage in judging  
68 romantic interest if the observers had relationship interest themselves (Place, et al., 2009), we  
69 also assessed the effect of such experience across cultures on their judgment accuracy. Overall,  
70 our main question is whether people across cultures judge romantic interactions from their own  
71 and other cultures in similar ways, reaching roughly equal success in deciphering cues of  
72 romantic interest between the couples they observe. If so this would suggest a common adaptive  
73 mechanism across multiple cultures.

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76 *2. Methods*77 *2.1 Participants*

78 We studied three independent samples of observers. The first was the original sample of  
79 54 non-German-speaking US college students (mean age=19.7, SD=2.8, described in Place, et  
80 al., 2009). In this sample, there were 29 men, of whom 15 were single, and 25 women, of whom  
81 16 were single. The second sample was 70 non-German-speaking Chinese college students  
82 (mean age=19.9, SD=1.3), made up of 35 men (21 single) and 35 women (26 single). The third  
83 sample was a German-speaking general population sample from Germany of 69 participants  
84 (mean age=25.9, SD=2.9). This sample consisted of 30 men (10 single) and 39 women (11  
85 single). All individuals were screened to be heterosexual and gave informed consent before  
86 beginning the experiment.

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88 *2.2 Stimuli*

89 The stimuli in this experiment consisted of videos of speed-dating encounters between  
90 singles meeting for the first time who were actively looking for mates in Berlin, Germany.  
91 Speed-dating is an effective way for individuals to meet many prospective mates in one evening,  
92 and has been proven useful in a variety of scientific settings (Finkel & Eastwick, 2008). These  
93 videos came from a set of speed-dating sessions run at Humboldt University in the Berlin Speed-  
94 Dating Study (Asendorpf, Penke, & Back, 2011). On these speed-dates, individuals met and  
95 conversed for approximately 3 minutes, at the end of each interaction each dater recorded their  
96 romantic interest in their partner (an offer). At the end of the entire session (comprising a dozen  
97 or so short speed-dates), mutual offers were calculated and individuals received further contact

98 information from their dates in cases of mutual interest. Participants received no reward except  
99 for the chance to find a real-life romantic partner.

100 In this experiment, videos of 24 speed-dates were used, of 48 different individuals (thus  
101 each date consisted of a unique man and woman). Each date was recorded with two video  
102 cameras each placed over the shoulder of one dater and focused on their seated partner. This  
103 camera angle allowed capture of body language, posture, and arm motion as well as potential eye  
104 contact and facial emotions. The two camera feeds were then combined (placed side by side) to  
105 create one composite video showing the two daters interacting, each seen face-on but slightly  
106 angled toward each other. From each original 3-minute date, a 10-second clip from the exact  
107 middle of the date was extracted and used as the stimulus<sup>1</sup>. Videos contained audio of the  
108 conversation, in German.

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### 110 *2.3 Procedure*

111 Participants first reported their age, sex and relationship status (single or in a  
112 relationship). They then watched and evaluated videos of speed-dates. Following each clip,  
113 observers were asked two binary yes / no questions: “Do you think the man was interested in /  
114 attracted to the woman?” and “Do you think the woman was interested in / attracted to the man?”

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<sup>1</sup> In this paper, we are analyzing only the data from participants watching 10-second clips from the middle of the date, to enable the greatest accuracy in observer judgments of romantic interest (Place, et al., 2009). This data for the Chinese and German samples was gathered in the same way as the original U.S. sample, interspersed with other video presentation lengths. In total, observers watched 96 videos, with clips of two lengths (10 second and 30 second) from three different time points in the date (beginning, middle, and end). For each interaction, observers saw 10 second clips from all three time points, and one 30 second clip from a randomly chosen time point.

115 All instructions were translated by native speakers into German and Chinese. Video presentation  
116 order was randomized across the 24 trials. The experimental design therefore comprised three  
117 between-subject measures (cultural sample, sex of observer, and relationship status of observer)  
118 and two dependent measures (perceived male interest and perceived female interest).

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### 120 *3. Results*

121 Raw accuracy was calculated by comparing each observer's judgment of romantic  
122 interest to the actual offers made by the daters after each speed-date<sup>2</sup>. Across observers, accuracy  
123 ranged from 58% to 64% correct judgments. The raw accuracy data was converted to z-scores to  
124 take into account the differences in base rates of male and female interest as follows. In the  
125 speed-dating interactions we used, men make offers roughly 40% of the time, and women  
126 roughly 30% of the time, leading to different accuracy rates for guessing using these base ratings  
127 (e.g. for guessing men's interest, accuracy would be  $\approx .40 * .40 + [1-.40] * [1-.40] = .52$ ). The  
128 chance levels corresponding to these base rates for men and women were subtracted from the  
129 raw accuracy values of each set of participants, and these differences were divided by the  
130 standard deviation of the accuracy distribution within each participant sample, to produce the z-  
131 scores. This allows a fairer comparison between accuracy of judgments of male and female  
132 romantic interest.

133 These z-scores were used in a univariate general linear model, with sex of observer (male  
134 / female), relationship status of observer (single / in a relationship) and nation of sample

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<sup>2</sup> This is partly different from the analysis in Place et al. (2009) using final decisions, thus our values for the U.S. sample have changed slightly.

135 (America / China / Germany) as between-subject fixed factors. Accuracy for predicting male  
136 interest was considerably above chance and showed no significant differences across the three  
137 samples,  $F(11,192) = 1.25, p = .26$ , with z-scores of .81 (Standard Error = .12) for the Chinese,  
138 .82 (.12) for the US, and 1.12 (.12) for the German sample. Furthermore, there was no effect of  
139 sex of observer or relationship status, nor were any interactions significant. For predicting female  
140 interest, accuracy was also above chance levels and showed no significant differences across the  
141 three cultures,  $F(11,192) = 1.18, p = .30$ . Z-scores for the samples were 1.05 (SEM .12) for the  
142 Chinese, .93 (.14) for the Americans, and .74 (.12) for the Germans. Furthermore, similar to the  
143 prediction of male interest there were no effects of sex of observer or relationship status of  
144 observer, nor were there any significant interactions.

145         Additionally, we looked for similar abilities to predict romantic interest across cultures  
146 by evaluating whether the particular daters who were easy or difficult to read for the original US  
147 participants were also easy or difficult for the Chinese and Germans. In the original US sample  
148 there was enormous variation in dater readability, with some daters easy to read by almost  
149 everyone (accuracy across all participants > 90%) and some daters who were universally difficult  
150 to predict (overall accuracy < 20 %). The accuracy with which each individual speed-dater was  
151 judged was very highly correlated across cultures (all  $p < .001$ ), see Table 1. These cross-cultural  
152 similarities in ability to read different individuals were uniform across the distribution of  
153 daters—accuracies for the easiest-to-read daters were as highly correlated across the participant  
154 samples as were the hardest-to-read daters.

155         One point of note is that the German observer sample is significantly older than the  
156 Chinese and American samples. Thus their performance in the task relative to the Americans and  
157 Chinese could be driven not (just) by cultural differences and an advantage in language



158 comprehension ability, but also by greater life experience and probably dating exposure. To test  
159 for this, correlations were calculated at the per-observer level that compared the age of each  
160 observer to their judgment of both male and female romantic interest. No correlations were  
161 significant (all  $r < .1$  and  $p > .52$ ), indicating again that age-related experience mattered little in  
162 these judgments.

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#### 164 4. Discussion

165 These results demonstrate strong similarities across cultures in the ability to judge  
166 romantic interest between others for both the intentions of men and women. Strong correlations  
167 across samples at the per-dater level showed that the individuals who were easy or difficult to  
168 read by one culture remained so for other cultures. Despite the possibility of combining different  
169 sets of cues to reach different judgments, various cultures still seem to end up reaching the same  
170 conclusions on romantic interest. What kinds of culture-independent cues could support such  
171 common assessments? Grammer and colleagues (1999) have shown that valuable information  
172 about interactions is contained in the global body motion of the individuals involved, an attribute  
173 they term *motion energy*. They found that an increase in motion energy covaries with an increase  
174 in romantic interest between the participants in an interaction. Because this macro-level cue is  
175 not culturally specific, it could potentially be recognized by individuals from various  
176 backgrounds. In line with this, recent behavioral work has shown that U.S. observers of first  
177 dates (as used above) can attend to and utilize this motion information when judging romantic  
178 interest (Place, 2010). Judgment accuracy was roughly equal for observers who watched  
179 unaltered videos of speed-dates and others who watched videos from which most cues beyond  
180 global motion were removed (by blurring the videos so that low-level individual cues of facial

181 attractiveness, eye contact, and expressions were obscured, and by taking out the audio of the  
182 conversations). Whether other potentially informative cues of turn-taking, pausing, and relative  
183 amount of time talking could still be determined and used remains to be studied.

184 The fact that German observers only weakly outperformed the other two, non-German  
185 speaking samples when judging males, and fell behind when judging females, indicates that  
186 understanding the verbal content of the dating conversations was not a major cue used by  
187 participants in our study. However, a set of cues that could be used by observers in all cultures  
188 are non-content verbal cues, such as prosody, speaking time, and synchrony between daters.  
189 Audio from speed-dates has been analyzed with automated computer algorithms that extract  
190 these cues and use them to predict the success of the daters (Madan, et al., 2005). While  
191 behavioral experiments using human listeners have not been conducted to test if humans can  
192 perform similarly to these algorithms, these cues at least have been shown to contain further  
193 information about romantic interest that could be used in addition to global body motion.

194 Another interesting finding in our data is that there were no differences in performance  
195 between observers of different sexes, from any of the cultural samples, which mirrors our  
196 previous findings on judgments of romantic interest from just U.S. observers (Place, et al., 2009).  
197 This further supports the idea that it can be adaptive for one to know not only the interest of  
198 potential suitors but also of potential same-sex competitors; in the latter case, knowing who  
199 same-sex individuals are attracted to can be useful social information to influence one's own  
200 mate choice preferences (Place, Todd, Penke, & Asendorpf, 2010).

201 One limitation to this study is the use of speed-dating clips only from Germany. Ideally,  
202 stimuli would also include videos of Americans and Chinese on speed-dates. This would allow  
203 for a fully-crossed methodology, with participants from all three cultural samples watching and

204 predicting the outcomes of dates of individuals again from all three cultures. To do so will  
205 require running speed-dating sessions in the U.S. and China following the same methodology as  
206 used in our German study (Asendorpf, Penke, & Back, 2011; Back et al., 2011). These results  
207 support the idea that the adaptively important ability to judge romantic interest accurately from  
208 thin slices of behavior is common across human cultures, and that there are particular cues  
209 displayed in mate choice that can apparently be perceived and interpreted by a wide cross-section  
210 of humanity.

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