

Abstract

Interest in dealbreakers has blossomed over the last decade, but we do not know how dealbreakers are used in mate choice. Here, we propose that some dealbreaker traits may act as disqualifiers, traits that we use to recognize others as potential mates. Alternatively, other dealbreaker traits may act like mate preferences and influence how attractive we find a potential mate relative to other potential mates. We use agent-based modeling and two samples of real-life couples, n = 1044, and n = 518, collected through Qualtrics' panel service, to test between these two possibilities. We find evidence that many of the traits colloquially considered to be dealbreakers, such as smoking status, height, and religion, are not used by the mind as disqualifiers, rather they act like preferences and are integrated into overall assessments of mate value. However, we find evidence that a person's sex is incorporated into mate choice like a disqualifier. Overall, considering and testing the evolved function of dealbreakers in the long-term mating process illuminates new directions for future research.

Keywords: dealbreakers, mate preferences, mate choice, mate recognition, agent-based modeling

Disqualifiers or preferences? How humans incorporate dealbreakers into mate choice

1. Introduction

What are dealbreakers? They have been defined as "unfavorable characteristics" or "traits people avoid in potential mates", are frequently discussed colloquially, and are gaining in research popularity (Boysen et al., 2019; Csajbók et al., 2023; Csajbók & Berkics, 2022; Joel & Charlot, 2022; Jonason et al., 2015, 2020). However, the evolved function of dealbreakers in mate choice, including how dealbreakers differ from mate preferences, has received less empirical attention.

Dealbreakers could in principle contribute to solving two important tasks in human mating: identifying who in one's environment is a potential mate (mate recognition), and deciding who among one's potential mates is best to pursue (mate evaluation). Kin detection and sexual disgust mechanisms have been connected to mate recognition (Lieberman et al., 2007, 2018; Tybur et al., 2013) whereas mate preference research has long been connected to mate evaluation (Buss, 1989; Conroy-Beam et al., 2019; Conroy-Beam & Buss, 2017; Pawłwski & Dunbar, 1999; Walter et al., 2020).

The contributions of dealbreakers in these tasks are less clear. "Dealbreakers," thus far have been discussed in the literature both ways: as qualities that eliminate people from recognition as possible romantic partners—which we will call "disqualifiers"—or as well as qualities that merely reduce a person's overall mate value evaluation—which we will call "preferences." Teasing these two tasks apart helps to clarify the role of dealbreakers in the overall mating process.

Here, using agent-based models and dyadic data, we assess which of these functions various putative dealbreaker traits serve in human mate choice. We used a method called "couple

simulation" to simulate the mate choice processes that created these couples (Conroy-Beam, 2021). To determine the role of dealbreakers in mate choice, we compared two models on their ability to recreate our sampled couples: one in which dealbreakers had the power to eliminate potential mates from consideration and one in which dealbreakers merely decreased the mate value of potential mates with dealbreaker features.

2. Study 1

We asked couples in long-term romantic relationships about their dealbreakers and their corresponding traits. The dealbreaker traits were selected based on a preliminary survey (see supplementary materials) and included a range of common dealbreakers. We created agent-based models using the data from these couples, where each simulated agent had the dealbreakers and traits of one participant and chose a mate in a simulating mating market of other participants. We compared the ability of two models, disqualifier and preference models, to reproduce participants' real-world relationships. The validity of this approach was established through a series of proof-of-concept models (see supplementary materials).

2.1 Methods

2.1.1 Participants

Participants were n = 1,044 heterosexual people in k = 522 long-term romantic dyads collected using Qualtrics' survey panel service. Participants were required to be living in the United States and be cohabiting with their romantic partner. The average relationship length was M = 27.83 years, with a range of 1-64 years. Participants had an average age of M = 56.89, and ages ranged from 21-89 years old. Additional participant demographics and descriptive data can be found in the supplementary materials. These data have been used in a prior study (Conroy-Beam et al., 2022).

2.1.2 Materials

Participants were asked about their dealbreakers, mate preferences, their own corresponding traits, and the traits of their romantic partner. For dealbreakers, participants were asked to select all the qualities that would be acceptable in a potential romantic partner. For example, each participant indicated which cigarette smoking habits, from "regularly smokes" to "doesn't smoke," were acceptable. The dealbreakers we asked about in this way were: race, class, politics, education, weight, religion, smoking status, kids from a prior relationship, and height.

Participants were asked about their sexual orientation and all participants indicated they were heterosexual. Therefore, we assumed that they considered people of the opposite sex acceptable mates and those of the same sex unacceptable mates. For the age dealbreaker, we used information from another part of the survey about each participant's maximum and minimum acceptable age for a romantic partner to infer their dealbreaker range. We assumed that they found people between their minimum and maximum age range to be acceptable mates and all others to be unacceptable mates.

Participants also indicated their own corresponding traits for each dealbreaker trait. For race, participants were able to select multiple options. For other traits (e.g. religion, politics), they could only select one option to describe themselves.

For preferences, we used the MPQ15, a mate preference questionnaire which has 31 items assessing 15 dimensions of ideal preferences on an 11-point Likert scale as well as one item assessing age preference on an 11-point Likert scale (Conroy-Beam et al., 2022). Participants rated themselves and their romantic partners on these same items using the same scale, except for age which was self-reported in years.

2.1.3 Procedure

Participants filled out the survey online. Each member of a couple was instructed to take their portion of the survey on their own, in private. Materials and procedures for all studies were approved by the [University name redacted] Institutional Review Board.

2.1.4 Data Processing and Analyses

The data from human participants were used to create simulated agents. Each participant was represented by an agent who had their reported dealbreakers, preferences, and traits. All agents were placed together in a mating market and chose each other as mates within these markets in 22 different mate choice simulations. These simulations manipulated whether each of the 11 proposed dealbreakers acted as preferences or disqualifiers. When a dealbreaker acted as a disqualifier, the mate value of any agent possessing one or more unacceptable dealbreaker trait levels was set to 0, rendering that agent invisible as a potential mate. However, when incorporating sex as a preference, male agents considered other male agents as mates, but with reduced mate values. To keep the preference models simple, the mate value (a value from 0-10) of any agent possessing a dealbreaker trait level was reduced by 2, the average distance between participant preferences and traits across dimensions. After computing mate values, agents in all models selected one another as mates using a resource allocation model of mate choice (Conroy-Beam, 2021).

Couple simulation accuracy is the percentage of couples that mutually chose their real-life mate in the simulation. A higher accuracy means that the model is closer to recreating the mate choices that participants used in real life. All study materials, data, and analysis scripts can be found on OSF at https://osf.io/ruzbx/?view_only=9cbbe2120592411fb69a9f2160d4cf26.

2.2 Results

The simulation accuracies for Study 1 are presented in Figure 1. Overall, the models that incorporated the dealbreaker trait as a preference tended to be more accurate than the models that incorporated the dealbreaker trait as a disqualifier. Paired permutation tests indicated that the difference between disqualifier and preference models was significant for height, smoking, age, class, politics, education, religion, weight, and prior kids (all ps < .01). The accuracies for race models were not significantly different from each other (p = .247) but were in the same direction as the other dealbreaker traits.

In contrast to the other dealbreaker traits, when sex was incorporated into mate choice as a disqualifier it recreated couples with a higher accuracy than when sex was incorporated as a preference. A paired permutation test indicated that this difference was statistically significant, p = .006.

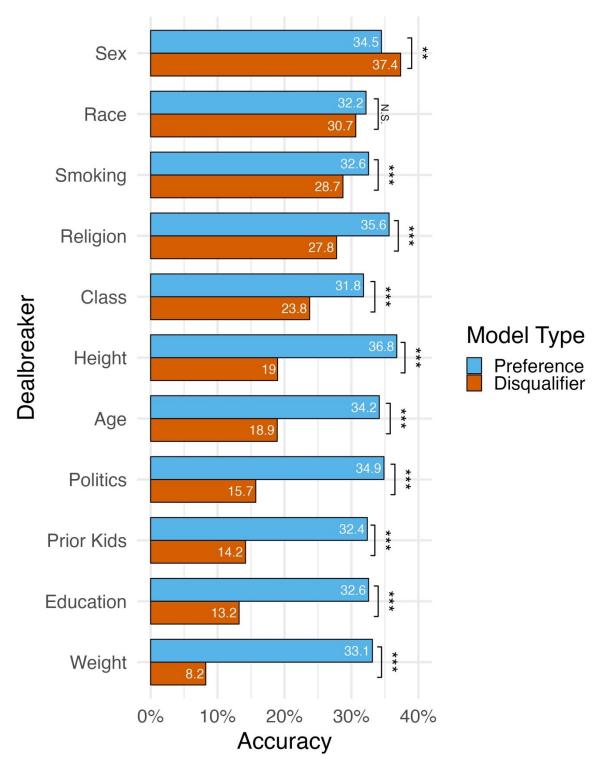


Figure 1. A bar plot showing the percent of couples accurately recreated by couple simulation. Each bar shows the results for a different type of model: preference or disqualifier, for each dealbreaker trait. *p<.05, **p<.01, ***p<.001, N.S. is not significantly different.

2.3 Discussion

Overall, these results suggest that, despite the colloquial name, most traits commonly considered "dealbreakers" are likely incorporated into mate choice processes as preferences and not as full disqualifiers. We use information about whether a potential mate passes our dealbreakers to adjust their overall mate value up or down to a slight degree. In contrast, these results also suggest that a person's sex is likely incorporated into the mind like a disqualifier.

3. Study 2

While informative, the results of Study 1 are potentially limited in that participants had been in established long-term relationships. The purpose of Study 2 was to see if the results from Study 1 would replicate in a sample of participants in newer, less established relationships. We collected data from couples who had been in their romantic relationships with each other for less than five years. We also added an additional dealbreaker trait (political party) and changed the wording of some of our dealbreaker questions to make it more obvious that we were asking about dealbreakers.

3.1 Methods

3.1.1 Participants

Data were collected using Qualtrics' survey panel service. Participants were required to identify as heterosexual, live in the United States, and to have been in the relationship with their current partner for less than 5 years. The sample size for this study was k = 259 dyads (n = 518 total participants). The average relationship length was M = 2.85 years, with a range of 0-5 years. Participants had an average age of M = 26.12 years old, and ages ranged from 18-57 years old. Most participants described their relationship status as dating (n = 326, 62.93%), some were engaged (n = 46, 8.89%), and some were married (n = 146, 28.19%).

3.1.2 Materials

The materials used in Study 2 were largely the same as in Study 1. There were, however, some important changes. First, in Study 2, the wording of the dealbreaker questions was changed slightly. We changed "acceptable" to "unacceptable" in order to ask participants more directly about things they did not want. This wording change was intended to more closely mirror how participants thought about dealbreakers.

We also changed the format of our class dealbreaker question to closely match the MacArthur Scale of Subjective Social Status (Adler et al., 2000). We did not include age as a dealbreaker trait in this study because the age distribution in this sample is relatively narrow (90% of participants were between the ages of 19 and 34). Lastly, we added an additional dealbreaker trait: political party affiliation.

3.1.3 Procedure and Analyses

Data collection procedure, processing and analyses were the same as in Study 1.

3.2 Results

The simulation accuracies for Study 2 are presented in Figure 2. Overall, as in Study 1, models that incorporated the dealbreaker trait as a preference tended to be more accurate than those that incorporated the dealbreaker trait as a disqualifier. Paired permutation tests between disqualifier and preference models for each trait indicated that the difference was significant for race, height, smoking, class, politics, political party, education, religion, and weight (all ps < .05). The accuracies for prior kids models were not significantly different (p = .499) from each other but were in the same direction as the other dealbreaker traits.

As in Study 1, when sex was incorporated into mate choice as a disqualifier it recreated couples with a higher accuracy than when sex was incorporated as a preference. However, in

contrast to Study 1, a paired permutation test indicated that this difference was not statistically significant, p = .746.

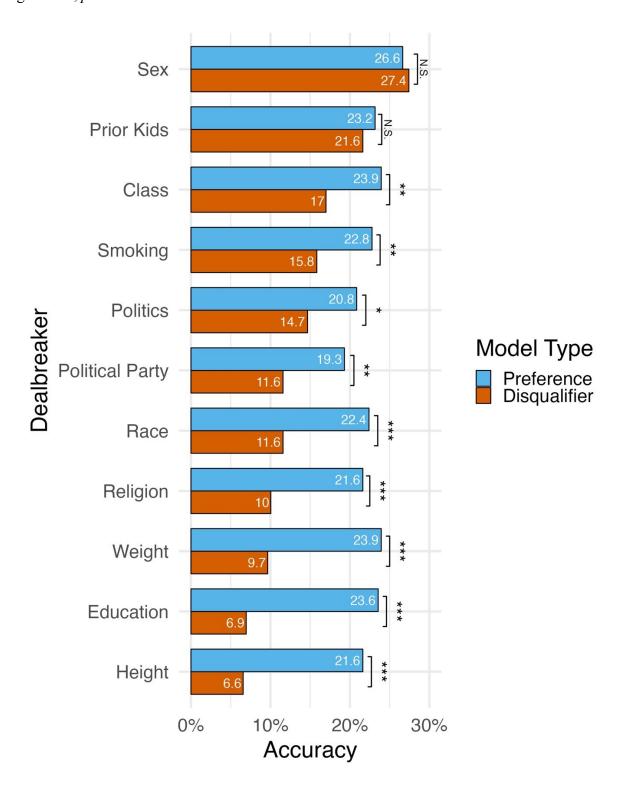


Figure 2. A bar plot showing the percent of couples accurately recreated by couple simulation. Each bar shows the results for a different type of model, preference or disqualifier, for each dealbreaker trait. *p<.05, **p<.01, ***p<.001, N.S. is not significantly different.

3.3 Discussion

Overall, the results of Study 2 replicate the patterns found in Study 1. For most dealbreaker traits, the model paired more real-life couples when dealbreakers were incorporated into the model as a preference than when the same dealbreaker trait was incorporated into the model as a disqualifier. These results again suggest that traits people tend to consider dealbreakers are used in mate choice like preferences, helping us determine the relative attractiveness of our potential mates.

Some key differences emerged between Studies 1 and 2. First, simulation accuracy was not significantly higher when sex was treated as a disqualifier than as a preference; however, this may have been an artifact of the smaller sample size. Second, overall simulation accuracy was lower; this was likely an artifact of the relative homogeneity of the sample (see Conroy-Beam et al., 2022) but may also be related to the altered wording of the dealbreaker questions. Generally, despite differences between Study 1 and Study 2, the pattern of results in Study 2 largely replicates the pattern of results found in Study 1.

4. General Discussion

Dealbreakers work thus far has led to insights into what traits are considered to be dealbreakers, sex differences and individual differences in the dealbreakers people express, as well as how people report to use dealbreakers in mate choice (Apostolou & Eleftheriou, 2022; Boysen et al., 2019; Csajbók et al., 2023; Csajbók & Berkics, 2022; Joel & Charlot, 2022; Jonason et al., 2015, 2020, 2022; Long & Campbell, 2015). However, reliance on colloquial

definitions of dealbreakers, coupled with the overall complexity of the mating process—with its many stages and shifting market dynamics—has led to confusion in terms of how dealbreakers fit in with the broader mate preference and mate choice literature.

Here, we used data from real couples and agent-based models to test between two possible functions for a dozen proposed dealbreaker traits. We found overall that we were able to simulate the mate choices that participants made in real life better when dealbreaker traits, like height, religion, and political views, were incorporated into mate choice like preferences as opposed to when they were incorporated as disqualifiers. The only exception to this pattern was for a person's sex—we were able to recreate the mate choices participants made in real life better when sex was incorporated into mate choice as a disqualifier, compared to as a preference. In sum, many of the traits that people consider to be dealbreakers appear to act as a part of mate evaluation systems rather than mate recognition systems in that they are used by the mind to determine the relative mate value of potential mates rather than to rule out specific mates from consideration entirely.

These findings dovetail with existing dealbreaker literature examining the role of dealbreakers in mate choice. One study found that the presence of only one dealbreaker was not grounds for complete rejection (Joel & Charlot, 2022). Another study found that both positive "dealmaker" and negative "dealbreaker" information influenced participants' levels of interest in romantic partners (Jonason et al., 2020).

Nonetheless, while the dealbreaker traits considered here cover a range of traits people commonly report as important dealbreakers, we must caution these results cannot be generalized to all dealbreaker traits. Whereas most dealbreakers we tested acted more like preferences than disqualifiers other traits such as age, close genetic relatedness to self, extreme bad hygiene,

mental health problems, hostility, and so on may function as disqualifiers too (Csajbók et al., 2023; Jonason et al., 2015). Prior work has found in at least one community that membership in an opposing political faction was treated as a disqualifier in mate choice (Conroy-Beam et al., 2023); the broad national sample used here might preclude the ability to detect such community-specific group disqualifiers (e.g., coalition, religion, or caste membership). We were unable to test the role of these dealbreakers here, but exploring these and other traits, particularly with the aim of distinguishing whether they act as preferences or disqualifiers, is an important avenue for future research.

While the current work provides insights into the role of dealbreakers in mate choice, there are some important limitations to consider. The couple simulation methodology, though a powerful tool for uncovering mate choice processes, attempts to recreate people's mate choices retrospectively—using their current dealbreakers to infer about their past mate choices. Even though our pattern of results aligns with other work examining the role of dealbreakers using inthe-moment mate choice paradigms (e.g. Joel & Charlot, 2022), it is possible that our participants may have reported different dealbreakers than those they used to originally choose their romantic partners. Future work can address this limitation by examining the role of dealbreakers in mate choice prospectively. In the mate preference literature, some evidence indicates that preferences remain stable across the lifespan (Bredow & Hames, 2019), while other evidence indicates that preferences can shift towards a person's current partner (Driebe et al., 2023; Gerlach et al., 2019). However, there is not yet research on how fixed dealbreakers are across time and changes in relationship status.

Additionally, we kept the scope of the research narrow to limit complexity. We kept all penalties for not meeting a dealbreaker the same across participants and used heterosexual

samples of couples. However, prior research has found sex differences and individual differences in responses to dealbreakers (Jonason et al., 2020). Furthemore, our samples were constrained to people in long-term relationships and thus are limited to people who were chosen as romantic relationship partners. Therefore, we may have under sampled from those with truly severe dealbreakers. Finally, we only examined dealbreaker traits that could be determined early on in a relationship. However, some dealbreakers, such as anger issues, may only be discovered at later stages of courtship. Future research could examine the role of dealbreakers in break ups. Based on the current study, when people in committed relationships discover a dealbreaker, they may downwardly adjust their evaluation of their partner's mate value. This change would relate to other downstream relationship emotions like satisfaction and possibly lead to relationship dissolution (Conroy-Beam et al., 2016; Hromatko et al., 2015).

Overall, we examined whether dealbreakers serve to narrow the potential mate pool by disqualifying costly mates or whether they serve to help determine the relative attractiveness of potential mates. We found that certain characteristics, like a person's sex, serve to narrow the potential mate pool, but other characteristics like religion, height, race, and political party are incorporated into mate choice like preferences, adjusting a potential mate's overall mate value up or down. However, more research is needed to examine other proposed dealbreakers and their role in mate choice.

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