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How do you build the perfect friend? Evidence from two forced-choice decision-making experiments

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Abstract

Friendship is a unique and underexplored area of human sociality. Research suggests that humans have preferences for characteristics in their friends that maximize the benefits of these relationships. Yet, whereas more friends might increase friendship benefits, humans also have limited time, resources, and energy to invest in finding high-quality friends, making it likely that the nature of these preferences differs depending on the resources an individual has available to invest in this goal. Across two studies (total $N = 693$), we investigated how this trade-off may function by investigating the nature of friendship preferences. In Study 1, we utilized the budget paradigm method from behavioral economics to investigate the necessities and luxuries in friendship preferences. In Study 2, we replicated these preferences with a novel method and extended our investigation into understanding the hierarchical nature of these preferences. Taken together, our results provide a promising starting point for research investigating trade-offs between necessities and luxuries in friendship preferences.

Keywords: friendships, preferences, budget paradigm, forced choice, behavior

How do you build the perfect friend? Evidence from two forced-choice decision-making experiments

In a world of possibilities, how do humans make decisions about which other individuals will make the best possible friends? Are there specific characteristics that set some potential friends apart? Or are desirable friends more than just the amalgamation of their traits? Scholars have grappled with questions about friendship dating back to Aristotle's classification of friendships as utility-, pleasure-, or character-based (Cooper, 1977). However, even with such intense scrutiny of what it means to be friends, scientific research on friendships is still in its infancy. We have some idea about what our individual preferences are (Apostolou et al., 2021; Krems et al., 2023; Williams et al., 2022), how it *feels* to be in a friendship (Demir et al., 2013; Flora, 2013; Sinanan & Gomes, 2020), the groups of individuals with whom we are likely to call friends (Dunbar, 2018; Fischer, 1982), but we nevertheless lack a methodical procedure for systematically describing these relationships. To begin to address questions such as these and as a first step to understanding these crucial relationships, this article elucidates traits that we desire in friends. The reason that we begin our investigation from this angle is because the traits people want in friends can provide researchers with valuable information about the kinds of benefits that people receive from these important relationships. However, focusing on these benefits should not imply that friendships are solely designed for utility maximization. Instead, focusing on the benefits friends can provide allows researchers to begin to scientifically describe the experiences humans associate with having friends.

In this investigation, we define friendships as voluntary and relatively long-term cooperative relationships between two or more genetically unrelated individuals who are concerned with mutually satisfying their affiliation needs (*APA Dictionary of Psychology*, 2007;

DeScioli & Kurzban, 2009; Perlman et al., 2015). Friendships are a universal aspect of human social life (Hruschka, 2010) due in part to the benefits that high-quality friendships can provide (Dunbar, 2018; Fehr, 1996; Hruschka, 2010; Perlman et al., 2015; Tooby & Cosmides, 1996). According to evolutionary theory, the benefits received from friends would have been crucial for ancestral humans' survival and flourishing across evolutionary history. For example, the benefits of friendship that would have been most influential to the success of our ancestors include obtaining support during physical conflicts (DeScioli & Kurzban, 2009, 2013), protection against physical threats (Bleske-Rechek & Buss, 2001; Campbell, 1999; Lewis et al., 2011; Smuts, 1985), and other forms of support when in need (Aktipis et al., 2011; Ayers et al., 2022; Gurven & Hill, 2009; Sugiyama, 2004; Tooby & Cosmides, 1996; Wasielewski et al., 2016). Additional accounts of friendship suggest that similarity (Bahns et al., 2019; Laursen, 2017) and familiarity (Reis et al., 2011; van Hoogdalem et al., 2012) may be central to the initiation and maintenance of friendships as both constructs promote the compatibility and mutual exchange of support in these relationships (but see(DeScioli et al., 2011; DeScioli & Kurzban, 2009)). As the maintenance of the rewards of affiliation for both one's self and friends seems to be a central tenet in friendship (Cropanzano & Mitchell, 2005; Murstein et al., 1977; Roberto & Scott, 1986a, 1986b), we have elected to focus our investigation on the kinds of traits that participants want in their friends to help them sustain mutually beneficial relationships and would have provided benefits such as those listed above to individuals who could successfully initiate and maintain them.

Although friendships would have been universally beneficial across evolutionary time for all who were able to maintain them, there are some uncertainties regarding the sex differences in preferences for traits in friends (Ayers et al., 2023a; Ein-Dor et al., 2015; Hall, 2011; Pham et al.,

2014; Vigil, 2007; Williams et al., 2022). For example, previous research has indicated that women may prioritize friendships that are more emotionally close than men do (Benenson et al., 1997; David-Barrett et al., 2015; Kon et al., 1978; Wright, 1982) and that this leads women's friendships to be less tolerant of potential disruptions to the closeness and prioritization of these relationships (Benenson, 2014; Benenson et al., 2009; Benenson & Christakos, 2003; Reynolds, 2021). Much of this research has focused on the appropriateness and expectations of 'female-typical' strategies used in friendship formation and has not incorporated 'male-typical' strategies that enhance intimacy in friendship (Cancian, 1986; Migliaccio, 2010). When more masculinized perspectives are incorporated, we often see that these sex differences are reduced (Migliaccio, 2010; Wood & Inman, 1993), but see (Rose & Rudolph, 2006).

As with all organisms, humans have finite resources that they can invest across different fundamental tasks, such as growth and reproduction, that influence their lifetime fitness outcomes (Charnov, 1993; Roff, 1993; Stearns, 1992). Humans would have faced a recurrent trade-off when deciding who to pursue as potential friends, as time and effort invested in building friendships inherently limits the time and effort that can be invested in satisfying other fundamental goals (Kenrick et al., 2010; Stearns, 2002). Given these constraints, how do humans navigate the trade-offs between acquiring high-quality friendships and pursuing other goals? One potential solution is for individuals to have preferences for friends who embody desirable and/or beneficial traits that can help them (indirectly) reach their goals (e.g., Krems & Conroy-Beam, 2020). By prioritizing friendships with such high-quality friends, individuals would be able to mitigate potential trade-offs between pursuing affiliation and pursuing other fundamental goals, as time spent affiliating could help indirectly achieve these other goals (attracting potential mates, caring for family members, etc.). Previous research suggests that humans have

preferences for friends who have beneficial traits, such as preferring to have friends who are cooperative, trustworthy, generous, and similar to us (Ayers et al., 2023b; Cottrell et al., 2007; A. B. Eisenbruch et al., 2019; A. Eisenbruch & Roney, 2020; Lewis et al., 2011, 2015; Verbrugge, 1977; Williams et al., 2022). Recent work suggests that these preferences are target specific, such that people want friends to be most kind (and least vicious) to oneself, comparatively less kind (and perhaps more vicious) to other people, and sometimes even more vicious than kind toward one's own rival (Krems et al., 2023).

Previous research also suggests that the preferences we have for specific traits in friends can form the basis for the expectations that we have of our friends' behavior in our friendships (Argyle et al., 1986; Argyle & Henderson, 1984; Ayers et al., 2023b; Felmlee et al., 2012; Felmlee & Muraco, 2009; Hall, 2011, 2012, 2018). A limitation of this research is that these preferences for traits in friends are often treated as orthogonal preferences, for which potential friends may possess any or all of these traits (for exceptions to this, see (Cottrell et al., 2007; Krems & Conroy-Beam, 2020; Williams et al., 2022), and are often referred to by different names such as traits, preferences, characteristics without acknowledging the underlying similarities in these constructs. For ease of communication, we refer to these constructs as "trait preferences" here. In reality, individuals may have to make decisions about potential friends who possess only one or a few of these beneficial traits. In contexts such as these, when choices are limited, what traits become necessities for a potential friend to possess, and what traits become luxuries?

The current set of studies was designed to investigate the necessities and luxuries in desirable friend traits. We hypothesized that participants should show different preferences for characteristics that friends may possess, depending on whether their choices were constrained. In

Study 1, we investigated which traits were deemed necessities and which traits were deemed luxuries in friends using a budget paradigm method (Li et al., 2002a), as this behavioral economics method allows researchers to study decision-making under various levels of choice constraints (e.g., more versus less limited budgets). We also investigated possible sex differences in these preferences, as previous research suggests that friendships, and preferences for traits in friends, may have been used to solve different sex-specific challenges over human evolutionary history (Williams et al., 2022). In Study 2, we replicated Study 1's budget paradigm results using a forced-choice method also allowed for the investigation of the possibly hierarchical nature of friendship necessities and luxuries. The data and code for all studies are available at Open Science Framework (OSF): https://osf.io/eyx5a/?view_only=1abf8c701c0f4565903b38ce5e3624f2.

Study 1

Method

Participants

Participants (N = 340, 154 males; M_{age} = 19.57, SD_{age} = 4.79; 35.3% identified as White or Caucasian, 34.1% identified as Asian or Pacific Islander; 89.7% identified as heterosexual) were recruited from introductory psychology classes at a large public Southwestern university. Participants were compensated with partial course credit for their participation in this study. As previous literature does not provide clear estimates of the effect sizes for trait preferences in friends, we ran a sensitivity analysis after data had been collected. With our sample size, power set to 0.80, and α = 0.05, we are properly powered to detect effect sizes as small as η^2 = 0.001 (*Pillai's Trace* = 0.06).

Materials and Procedure

Participants completed an in-lab questionnaire about their preferences in same-sex [1] friendships. After reading the consent form, participants completed a budget paradigm in which they were instructed to create their “perfect” friend (Li et al., 2002b). Participants were randomly assigned to one of the three budget conditions [2]: low budget condition (N = 119), medium budget condition (N = 118), or high budget condition (N = 119). According to Li et al. (2002), participants focus their spending on necessary traits (i.e., traits that are essential in friendship) when they are presented with the low budget condition in this task. Similarly, when participants are given a high budget for this task, participants are able to broaden their spending to include both necessity and luxury traits (i.e., traits that are desired but not essential in friendship). Researchers can then determine which traits are necessities and luxuries in friendship by comparing the different spending patterns across different budget conditions.

After agreeing to participate in the study, participants were instructed to create their “perfect” friend using the number of friendship tokens provided to them. Participants were explicitly told,

> *Imagine that you are creating the "perfect friend". The more you invest in one trait, the more of this trait your "perfect friend" will possess. However, you have a finite budget that you can invest. This means that the more tokens you invest in one trait, the less you can invest in other traits. For this survey, you will be using percentile scales to describe how much of each trait your "perfect friend" possesses compared to all other persons of the same sex that you might encounter. For example, someone who is at the 0th percentile has more of this trait than 0% of all people, someone who is at the 50th percentile has more of this trait than 50% of all people, and someone who is at the 100th percentile has more of this trait than 100% of all people. Imagine that you have 20 [40, 60] friendship tokens. Each token is worth a 10th percentile point increase in your "perfect friend". Please invest them in the characteristics you want your "perfect friend" to have.”*

Across all budget conditions, participants were instructed to invest their friendship tokens across ten potential traits: friends who are loyal, reliable, trustworthy and honest, faithful and committed, concerned for your well-being, respectful, shares information, forgiving, emotionally

intelligent, and conscientious about paying back debt. These traits were selected after reviewing previous literature regarding traits that are important in friendship (as described in Ayers et al., 2023). In the real world, traits that are important in friendship rarely exist as static entities. Instead, these traits are embedded within the individuals and their interactions with others, allowing potential friends to observe and judge the existence and importance of these traits in real time. As it is not possible to emulate these dynamic interactions and assessments using questionnaires, we instead elected to emulate the friendship initiation phase of relationship-building and provide participants with minimal information about these traits similar to the amount of information that participants would have access to when making decisions about initiating friendships in the real world.

To determine necessity and luxury traits, we used a between-subjects design to compare participant allocations in the low-budget condition to participant allocations in the high-budget condition after removing the average amount spent in the medium-budget condition (as per Li et al., 2022, subtracting the medium-budget condition from the high-budget condition removes all spending on necessities so that the resulting pattern specifies the portion of the budgets that are spent on luxuries). It is important to note that the budget paradigm design allows for a data-driven categorization of these traits, and that researchers do not enter into the analyses with *a priori* predictions regarding which traits will be necessity traits and which traits will be luxury traits. Specifically, if traits are considered to be necessities in friendship, this is because participants have spent the largest portion of their budget on these traits when they had a constrained budget. This indicates that our participants prioritized these traits greatly when their choices were limited. Similarly, if traits are considered to be necessities in friendship, this is because participants have spent the largest portion of their budget on these traits when they did

not have constraints on their budgets. This indicates that our participants only prioritized these traits in their friends when they did not have to make a choice between traits their friends need to have and the traits that are superfluous in friends. These calculations left us with a final sample of $N = 235$ (106 males; $M_{age} = 19.70$, $SD_{age} = 2.00$; 36.3% identified as White or Caucasian, 33.2% identified as Asian or Pacific Islander; 90.9% identified as heterosexual) to compare necessity ($N = 116$) and luxury ($N = 119$) trait choices.

Results

Are there differences in necessity and luxury trait preferences for a perfect friend?

We predicted that participants should prioritize different traits when they were rating necessity and luxury traits. As there is mixed evidence about whether or not these traits should be sex-specific (Ayers et al., 2023b; Williams et al., 2022), we did not make *a priori* predictions about sex differences in these preferences. However, we did include participant sex to account for the possibility that trait preferences would be sex-specific. We ran a 2 (budget condition) x 2 (sex) multivariate ANOVA using calculated scores to establish if there were differences in spending patterns across budgets by sex. We found a significant multivariate effect of budget condition, $F(10, 221) = 11.39$, $p < 0.001$, *Pillai's Trace* = 0.34, but no significant multivariate effect of sex, $F(10, 221) = 0.91$, $p = 0.52$, *Pillai's Trace* = 0.04, and no significant multivariate interaction of sex*budget condition, $F(10, 221) = 0.97$, $p = 0.47$, *Pillai's Trace* = 0.04. Taken together, these results suggest that there were significant differences in how participants spent their budgets when considering necessity and luxury traits. Therefore, we next compared the budget spending to understand the prioritization of traits in each budget condition.

What are the necessities and luxuries in traits friends can possess?

To determine which traits were necessities and luxuries in friendship, follow-up one-way

ANOVAs were run for our friendship traits. Overall, having a friend who was loyal, reliable, and trustworthy and honest were considered to be necessities in friendship (see Table 1). When we looked at potential interactions for these traits, both men and women rated loyalty as a necessity in their friendships. However, men spent significantly more of their budget on this trait in the low-budget condition (M = 3.72, SE = 0.27) compared to women in the low-budget condition (M = 2.87, SE = 0.26) and compared to men and women in the high-budget condition (M_{men} = 1.37, SE_{men} = 0.28; M_{women} = 1.81, SE_{women} = 0.25).

Next, we investigated the luxury traits in friendship (see Table 1 and Figure 1). Overall, having a friend who shares information, is forgiving, is emotionally intelligent, and is conscientious about paying back debt were considered to be luxuries in friendship. When we looked at potential interactions for these traits, there were no significant sex* budget condition interactions.

We also noted that there were no significant differences in spending by budget condition nor sex*budget condition interactions for having a friend who was faithful and committed, respectful, or concerned with your well-being.

[Table 1 here]

[Figure 1 here]

Discussion

The purpose of this study was to investigate the necessity and luxury traits in friendship– or what traits people most prioritize in their friends versus those they would like but might prioritize less. Our findings suggest that having a friend who is loyal, reliable, and trustworthy and honest are necessities in friendship. Having a friend who is forgiving, shares information, is emotionally intelligent, and is conscientious about paying back debt are luxuries in friendship. Our findings also suggest that men and women generally agree on which traits are necessities

and which traits are luxuries in friendship. The only trait that had a significant sex*budget condition interaction was loyalty: men thought having a loyal friend was more of a necessity than women. Having a friend who is faithful and committed, respectful, or concerned with your well-being did not emerge as either necessities or luxuries, and there were no significant sex* budget condition interactions. However, due to the nature of this methodology, we are not able to determine if effects did not emerge for these traits because they are not considered to be important in friendship or if these traits are so important in friendship that participants consider these to be non-negotiable aspects of friendship.

The lack of sex differences is in accordance with previous research on friendship preferences suggesting that there are fewer sex differences in some friendship preferences than previously thought (Cancian, 1986; Migliaccio, 2010; Wood & Inman, 1993) but see also (Rose & Rudolph, 2006). As men and women are likely to have experienced many similar recurrent adaptive challenges across evolutionary time and comparatively fewer sex-specific ones, men and women would have similarly benefitted from friends who possess the same beneficial traits (Ayers et al., 2023b; Barakzai & Shaw, 2018; Krems et al., 2023; Williams et al., 2022). Given these results, and nuances in friendship preferences, we sought to replicate this using a novel method to assess friendship preferences. In addition to replicating these findings, we also wanted to extend our investigation into understanding if there is a hierarchical structure to these preferences within the trait categories.

Study 2

Method

Participants

We performed power analyses in R using the *pwr* package (Champely & Champely,

2007) and our effect sizes from Study 1. Our effect sizes ranged in size (partial η^2= 0.002 - 0.15), so we decided to conservatively use a medium effect size. With power of 0.80, α = 0.05, and medium effect size (Cohen's h = 0.20), we need a minimum sample size of 202 participants. Due to the nature of the survey and measures in the survey that were collected for another study that is irrelevant to the current research, we aimed to collect twice this number of participants. Our final sample of participants (N = 449, M_{age} = 18.92, SD_{age} = 1.30; 46.9% identified as White or Caucasian, 24.0% identified as Asian or Pacific Islander, 93.7% identified as heterosexual) were recruited from introductory psychology classes and compensated with partial course credit.

Materials and Procedures

We presented participants with a novel forced-choice paradigm where participants had to select one of two potential combinations of desirable traits (e.g., "Would you rather have a friend who is *always* loyal but *never* reliable OR a friend who is *never* loyal but *always* reliable"). Presenting participants with these forced-choice options allows us to see if the necessity and luxury trait dichotomy replicates with a new method. Participants were first presented with forced-choice options that pitted different necessity traits against one another. After this, participants were presented with forced-choice options that pitted different necessity traits against different luxury traits. Finally, participants were presented with forced-choice options that pitted different luxury traits against one another. If participants have no preferences between the forced choice options, then we would expect traits to be selected at change levels. However, if participants do have preferences between the forced choice options, then we would expect that participants will select the most important trait above chance levels.

This method allows us to 1) replicate findings from Study 1 by showing that necessity traits are picked as being more important when participants are forced to choose between

necessity and luxury traits, and 2) explore the potential hierarchical nature of these preferences by documenting which necessity traits are picked within each category. As such, we can look within the necessity traits to see which traits are considered to be the most necessary in friendships, as these traits will be picked at a greater frequency than other necessity traits. Additionally, we can look within luxury traits to see which traits are considered the most luxurious traits in friendships, as these traits will be selected at a lower frequency than other luxury traits. Luxury traits that are selected at a greater frequency than other luxury traits can be considered the most important luxuries since these traits are selected more often than all other luxury traits.

Results

Choosing between necessity and luxury traits

First, we investigated decisions between necessity and luxury traits in potential friends (Table 2) using nonparametric exact binomial tests. If there were no differences in preferences for necessity and luxury traits, then we would expect traits would be chosen at chance levels (proportion of choices = 0.50). However, if there are preferences, then we should see choices significantly different from chance levels. Across all comparisons, participants always selected the choice of having a friend who always had the necessity, but never had the luxury, trait (the proportion of participants selecting necessity traits over luxury traits ranged from 0.64 to 0.94) over the choice of having a friend who always had the luxury, but never had the necessity, trait (the proportion of participants selecting luxury traits over necessity traits ranged from 0.06 to 0.36). This pattern of preferences conceptually replicates the results of the budget paradigm from Study 1 by reaffirming that necessity traits are selected most frequently in this paradigm when presented with a forced-choice option regarding different traits that friends may possess.

[Table 2 here]

Choosing between necessity traits

Next, we investigated how participants made decisions between the necessity traits (Table 3). Similar to the analysis above, if there are no differences in preferences for necessity traits in friends, then we would expect traits would be chosen at chance levels (proportion of choices = 0.50). However, if there are preferences, then we should see choices significantly different from chance levels. Our analyses indicated that participants exhibited clear differences in their preferences for necessity traits in their friends (with the proportion of participants showing a preference among the necessity traits ranging from 0.65 to 0.77). Necessity traits were organized such that having a friend who is trustworthy and honest was chosen the most frequently (suggesting that it is the biggest necessity), followed by having a friend who is loyal. Having a friend who is reliable was chosen least frequently in this paradigm, suggesting that it is the lowest priority when selecting necessary traits in friends.

[Table 3 here]

Choosing between luxury traits

Lastly, we investigated how participants made decisions between the luxury traits (Table 4). Again, if there are no differences in preferences for luxury traits in friends, then we would expect traits would be chosen at chance levels (proportion of choices = 0.50). However, if there are preferences, then we should see choices significantly different from chance levels. Our analyses indicated that participants exhibited clear differences in their preferences for luxury traits in their friends (with the proportion of participants showing a preference among the luxury traits ranging from 0.54 to 0.74). Luxury traits were organized such that having a friend who is forgiving was chosen the most frequently (suggesting that it is the most important luxury trait),

followed by a friend who is emotionally intelligent and a friend who shares information. It is important to note here that there was not a statistically significant difference in the proportion of participants who selected having a friend who is emotionally intelligent and a friend who shares information ($p = 0.097$), suggesting that participants did not have strong preferences when differentiating between these traits. Lastly, having a friend who is conscientious about paying back debt was chosen the least frequently in this paradigm, suggesting that it is the biggest luxury trait when selecting luxury traits in friends.

[Table 4 here]

Discussion

Study 2 aimed to replicate the budget paradigm using a novel forced-choice method to understand the nuances in necessity and luxury trait preferences in friendship. Results suggest that necessity traits were consistently chosen over luxury traits in all forced-choice decisions. This pattern of results conceptually replicated budget paradigm results from Study 1 and provides more credibility to the distinction of different kinds of traits in friendship that we observed across the two studies.

In addition, we investigated the potential order of these preferences by asking participants to select between the different necessity and luxury traits using this forced choice method. This investigation of trait preferences goes beyond the information that can be extracted from the budget paradigm method, as the budget paradigm does not force participants to choose between the traits when making their overall budget selections. When forced to pick between necessity traits, participants wanted a friend who was trustworthy and honest, followed by loyal, and, lastly, reliable. When forced to pick between luxury traits, participants wanted a friend who was forgiving, emotionally intelligent or shared information, and, lastly, conscientious about paying

back debt. Our participants here did not have clear preferences for having a friend who was emotionally intelligent and having a friend who shared information, suggesting that these traits are equally desirable when selecting traits in potential friends. In all, the results of this study help to further elucidate differences in preferences for friends' traits beyond what can be observed using the budget paradigm.

General Discussion

Humans face a problem in friendship: There are often multiple prospective friends in any one environment, but people's time–including time spent to find, cultivate, and maintain friendships–is limited. One way that ancestral humans could have ensured that they made the best possible choice was to have preferences for traits in friends that were associated with individuals who are likely to provide benefits to their friends (Ayers et al., 2023b; Cottrell et al., 2007; A. Eisenbruch & Roney, 2020; Krems & Conroy-Beam, 2020; Williams et al., 2022) but see (Sugiyama, 2015). The aim of this work was to investigate these friendship preferences using a budget paradigm (Li et al., 2002a) as well as a novel forced-choice method to further understand friendship preferences.

The results of Study 1 suggested that having friends who are loyal, reliable, trustworthy, and honest are necessities in friendship. Additionally, having friends who are forgiving, share information, are emotionally intelligent, and are conscientious about paying back debt are luxuries in friendship. These preferences for necessity and luxury traits provide insights for future researchers. For example, previous research (Barakzai & Shaw, 2018; Williams et al., 2022) has suggested that, when considering beneficial traits within friendships, there may be little reason to expect sex differences in these preferences as the benefits of being friends with individuals who possessed these traits were not sex-specific over evolutionary time. Or, in other

words, being friends with individuals who possess these traits is universally beneficial and explains why there are clear preferences for these traits in friends. Additionally, the results of Study 1 documented that there was no significant main effect of sex, suggesting that men and women generally agree on which traits are necessities and which traits are luxuries in friendship as has been suggested in previous research (Cancian, 1986; Migliaccio, 2010; Wood & Inman, 1993). However, one possibility that has been discussed in previous research (Ayers et al., 2023b) is that, even as there may not be sex differences for individual traits, the combination of these traits in a single individual and/or the ways that these traits manifest themselves in a friends' behavior may be sex-differentiated.

The results of Study 2 replicated the preferences for necessity and luxury traits in friendship and extended our understanding of these preferences by establishing the hierarchical order of these preferences (i.e., determining the most necessary necessity traits and most luxurious luxury traits) beyond what was observed in the budget paradigm by using a novel forced-choice method. We saw, in every comparison, that participants selected the necessity trait at a greater frequency than the luxury trait when asked to decide between these choices. Taking these results in combination with those from Study 1 affirms that having a friend who is loyal, reliable, trustworthy, and honest were necessities in friendship. Similarly, having a friend who is forgiving, emotionally intelligent, shares information, and is conscientious about paying back debt were luxuries in friendship.

When we investigated the hierarchical organization of these preferences in friendship, we found that participants had clear preferences for the relative importance of these traits. Results suggest that having a friend who is trustworthy and honest was the most necessary trait for friends to possess, followed by having a friend who is loyal and having a friend who is reliable.

In addition, results suggest that having a friend who is forgiving was the most important luxury trait for friends to possess, followed by a friend who is emotionally intelligent, a friend who shares information, and a friend who is conscientious about paying back debt. Participants did not have strong preferences when differentiating between having a friend who is emotionally intelligent and having a friend who shares information.

Understanding the hierarchical structure of preferences for traits in potential friends is a valuable step in friendship research, as understanding this structure will help researchers identify the most important traits that friends may possess and their implications for other friendship processes. For example, research on friendship maintenance and dissolution often investigates violations of specific rules, expectations, or standards in friendship as potential indicators of friendship viability and longevity (Apostolou et al., 2021; Apostolou & Keramari, 2022; Argyle & Henderson, 1984; Bleske-Rechek & Buss, 2001; Dean et al., 2017; Hall, 2011, 2012), but these investigations often focus on act nomination as the basis of their investigations without assessing the kind of information that is transmitted between individuals with these behaviors. That is, a common theme is that friends should help one another, but it is not clear if helping one another shows that a friend is trustworthy or reliable and if violating this theme shows that a friend is not trustworthy or reliable. More research is needed to understand how these well-established expectations, rules, and standards in friendship relate to trait preferences in friendship.

Limitations and Future Directions

The first limitation of this investigation is that our samples were drawn from a convenience population of college-aged participants at a large public Southwestern University. While it is true that college-aged participants may be particularly interested in making and

maintaining friendships (Benenson, 2014; Fox et al., 1985; Krems et al., 2017; Paul & Kelleher, 1995), this limited age range inherently limits the generalizability of the present results to other age ranges as well as to individuals in other cultures (Hruschka, 2010; Schug et al., 2009, 2010). Although these considerations do not pose a major problem for the current investigation, as this investigation was intended to be a preliminary examination of trait preferences, future research will need to specify the age ranges under investigation so as to make statements about the importance of different traits at different points in individuals' lives. Though research has documented that friendships and their accompanying preferences change over the life course, there have yet to be systematic investigations into the longitudinal changes in these preferences *within* individuals. While our results allow us to make tentative statements about the importance of different traits for college-aged participants, it is possible (and, in reality, most likely) that these preferences would change over the course of our participants' lives so that the profiles of necessity and luxury traits would be differences at different ages. In addition, the present study is fairly homogenous, which also limits our ability to investigate other potential individual differences (e.g., SES or educational status) in preferences. Future research with more diverse and culturally representative samples is needed to understand the full generalizability of these results.

Another limitation is that we only asked participants about their preferences for same-sex friends, as previous research has outlined that close human friendships are more likely to be same-sex than other-sex (Hrdy, 2000; Marlowe, 2007; Silk, 2003). However, recent research has begun looking in depth at the benefits of why humans also form opposite-sex friendships (Bleske-Rechek et al., 2012; Bleske-Rechek & Buss, 2001; Laakasuo et al., 2017; Lenton & Webber, 2006; Lewis et al., 2011). Insofar as opposite-sex (versus same-sex) friendships may

have presented some different kinds of challenges and opportunities, it is reasonable to expect that the traits individuals prefer in opposite-sex friendships may be different from the traits individuals prefer in their same-sex friendships. Future research should ask participants about their preferences for both same- and opposite-sex friendships to determine the similarities and differences in friendship preferences as a function of this.

Similarly, in this investigation, we asked participants to think about hypothetical friends (i.e., a "perfect" friend) when making their decisions about the traits they want their friends to possess. The reason that we decided to use this idealized version of a friend is because building a "perfect" friend should allow participants to transparently document the traits in friends that are most important to them and provide us with a clear starting point for investigating valued traits in friends. However, this does not allow us to investigate if these preferences are actualized in real-life friendships. While previous research has documented that idealized preferences for friends are associated with actual friendship choices (Krems & Conroy-Beam, 2020; Williams et al., 2022), there are some important individual differences that need to be considered when discussing which individuals are able to turn their idealized *preferences* into actualized *friendships*. For example, not everyone will be able to actualize their preferences if they themselves do not possess enough of the desirable traits that people want in friends to attract desirable potential friends (Krems & Conroy-Beam, 2020). In other words, those with higher value on the friend market are better able to realize their friendship preferences. It is also possible, however, that those who possess these desirable traits are better able only to *start* friendships that meet their idealized preferences, but are not necessarily better able to maintain these relationships. Future research would benefit from continuing to understand the relationship between idealized and actualized preferences in friendships to understand the individual

differences that lead to differences in how idealized preferences can be transformed into actualized friendships.

Along similar lines, a limitation of the current investigation is that providing participants with hypothetical choices about hypothetical friends forces our participants to make decisions without potentially vital contextual information. In real friendship decisions, information about desirable traits is never presented in a context-free manner as we have done here. Rather, these traits are embedded within a friend and interact with other traits, expectations, experiences, and environmental factors. As such, it is highly unlikely that participants would have made real-world friendship decisions where they had to pick between potential friends who *always* or *never* possess specific traits. For the purposes of the current investigation, this does not limit our ability to describe the kinds of preferences exhibited by our participants. Future research, however, can eliminate this limitation and make generalizations about actual friendships by investigating the thresholds for these traits that are necessary for someone to be considered a good friend. Additionally, it would be fruitful for future researchers to describe the contextual factors under which these preferences become more, or less, important in friendships.

A final limitation is that we used a paradigm from behavioral economics to investigate friendship preferences in Study 1 and created a novel paradigm to investigate these preferences in Study 2. While the budget paradigm has been widely used in research to assess the trade-offs of different trait preferences in different kinds of relationships (Cottrell et al., 2007; Li et al., 2002a; Li & Kenrick, 2006; Williams et al., 2022), the task may be cognitively taxing for participants. The budget paradigm requires that participants think in an economic or utilitarian fashion about friendships, which, according to some past work, are not to be thought of in economic or utilitarian ways. As a consequence, perhaps this task may not have captured the full

extent of individual preferences for specific traits. Additionally, Study 2 used a paradigm that has not been used in research previously, opening up the possibility that the paradigm may have missed important nuances in these preferences, even as it replicated findings using the previously established budget paradigm. As such, our results should be interpreted with caution until they are replicated with a new sample.

One potentially fruitful avenue for future research is to investigate how these preferences for traits in friendship relate to the costs of friendships. In our investigation, as well as many other investigations into friendship preferences, we assumed that these traits must be associated with beneficial aspects of friendship. However, we made this assumption out of necessity as there is little research assessing the costs of friendship beyond a reduction in time and investment that could be used to foster other relationships or pursue other goals (Dunbar, 2018; Hall, 2018; Hill & Dunbar, 2003). Costs of friendships should be an important decision criterion for individuals when they are determining whether or not to pursue a new friendship or terminate an existing friendship, and the ways that these costs are associated with specific kinds of traits friends possess should be investigated. For example, previous research has suggested that sometimes we want friends with undesirable traits (e.g., viciousness) so long as those traits are directed at our rivals (Krems et al., 2023). But there are other kinds of costs, such as a loss of investment in reproductive goals, overly generalizability of benefits to others, and reduced ability to manage one's goals that might be associated with different combinations of specific traits in friends (i.e., being overly concerned about paying back debt might lead a friend to pay back someone you do not know at the expense of your friend paying you back). Future research is needed on the costs of friendship to understand how trait preferences and potential trait aversions may be related to different kinds of costs in friendship.

Conclusion

We set out to investigate the necessities and luxuries building on the traits mentioned in previous literature (Ayers et al., 2023b; Cottrell et al., 2007; A. B. Eisenbruch et al., 2019; A. Eisenbruch & Roney, 2020; Williams et al., 2022). Across two studies, we documented that our participants had clear preferences for necessity and luxury traits in friendship and that there appear to be few sex differences for these beneficial traits. However, future research is needed to further understand how these trait preferences relate to other friendship processes as well as actualized friendships.

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Footnotes

[1]We elected to specify same-sex friendships as previous research has outlined that close human friendships are more likely to be same-sex than other-sex (Hrdy, 2000; Marlowe, 2007; Silk, 2003).

[2]Traditionally, participants are presented the budget paradigm as a within-subjects task. However, due to the nature of our sample and data collection, we elected to use the budget paradigm as a between-subjects task to reduce participant fatigue and have made appropriate changes to the calculations of necessities and luxuries to compensate for this change.

Table 1.
Summary of traits that are necessities and luxuries in friendship.

Trait	Amount of necessity budget spent *M*(*SE*)	Amount of luxury budget spent *M*(*SE*)	Inferential statistic
Loyal*	3.30 (0.19)	1.59 (0.19)	$F(1, 230) = 41.99$, $p < 0.001$, *partial* $\eta^2 = 0.15$
Faithful and Committed	1.99 (0.17)	2.03 (0.16)	$F(1, 230) = 0.03$, $p = 0.86$, *partial* $\eta^2 = 0.0001$
Shares information	1.72 (0.18)	2.28 (0.18)	$F(1, 230) = 4.65$, $p = 0.03$, *partial* $\eta^2 = 0.02$
Reliable	2.74 (0.18)	1.69 (0.18)	$F(1, 230) = 17.42$, $p < 0.001$, *partial* $\eta^2 = 0.07$
Forgiving	1.52 (0.16)	2.00 (0.15)	$F(1, 230) = 4.77$, $p = 0.03$, *partial* $\eta^2 = 0.02$
Respectful	2.10 (0.16)	2.25 (0.16)	$F(1, 230) = 0.48$, $p = 0.49$, *partial* $\eta^2 = 0.002$
Emotionally Intelligent	1.49 (0.20)	2.60 (0.20)	$F(1, 230) = 15.35$, $p < 0.001$, *partial* $\eta^2 = 0.06$
Trustworthy and Honest	2.98 (0.21)	2.06 (0.20)	$F(1, 230) = 9.77$, $p = 0.002$, *partial* $\eta^2 = 0.04$
Conscientious about paying back debt	0.85 (0.17)	2.38 (0.17)	$F(1, 230) = 41.93$, $p < 0.001$, *partial* $\eta^2 = 0.15$
Concerned about well-being	1.87 (0.23)	2.09 (0.23)	$F(1, 230) = 0.49$, $p = 0.49$, *partial* $\eta^2 = 0.002$

Note. * Men perceived as a greater necessity.

Table 2.
Participants preferred friends with necessity traits instead of luxury traits when forced to pick between them.

		Luxuries in friendship			
		Shares information	Forgiving	Emotionally intelligent	Conscientious about paying back debt
Necessities in friendship	Loyal	Loyal (N = 394, proportion = 0.89, 95% CI [0.86, 0.92]) > Shares information (N = 47, proportion = 0.11, p < 0.001)	Loyal (N = 352, proportion = 0.79, 95% CI [0.75, 0.83]) > Forgiving (N = 92, proportion = 0.21, p < 0.001)	Loyal (N = 376, proportion = 0.85, 95% CI [0.81, 0.88]) > Emotionally intelligent (N = 68, proportion = 0.15, p < 0.001)	Loyal (N = 378, proportion = 0.86, 95% CI [0.82, 0.89]) > Conscientious about paying back debt (N = 64, 0.14, p < 0.001)
	Reliable	Reliable (N = 354, proportion = 0.80, 95% CI [0.76, 0.84]) > Shares information (N = 86, proportion = 0.20, p < 0.001)	Reliable (N = 285, proportion = 0.64, 95% CI [0.60, 0.69]) > Forgiving (N = 158, proportion = 0.36, p < 0.001)	Reliable (N = 345, proportion = 0.78, 95% CI [0.73, 0.81]) > Emotionally intelligent (N = 100, proportion = 0.22, p < 0.001)	Reliable (N = 372, proportion = 0.83, 95% CI [0.79, 0.87]) > Conscientious about paying back debt (N = 75, proportion = 0.17, p < 0.001)
	Trustworthy and honest	Trustworthy and honest (N = 415, proportion = 0.94, 95% CI [0.91, 0.96]) > Shares information (N = 27, proportion = 0.06, p < 0.001)	Trustworthy and honest (N = 389, proportion = 0.88, 95% CI [0.85, 0.91]) > Forgiving (N = 52, proportion = 0.12, p < 0.001)	Trustworthy and honest (N = 407, proportion = 0.92, 95% CI [0.89, 0.95]) > Emotionally intelligent (N = 34, proportion = 0.08, p < 0.001)	Trustworthy and honest (N = 403, proportion = 0.92, 95% CI [0.86, 0.94]) > Conscientious about paying back debt (N = 37, proportion = 0.08, p < 0.001)

Note. For each question, participants read the test "*Would you rather have…*" before being presented with the forced-choice options.

Table 3.
Participant preferences within necessity traits.

	Loyal	Reliable	Trustworthy and honest
Loyal	--	Loyal (N = 312, proportion = 0.70, 95% CI [0.66, 0.74]) > Reliable (N = 132, proportion = 0.30, p < 0.001)	Loyal (N = 155, proportion = 0.35, 95% CI [0.30, 0.40]) < Trustworthy and honest (N = 289, proportion = 0.65, p < 0.001)
Reliable		--	Reliable (N = 101, proportion = 0.23, 95% CI [0.19, 0.27]) < Trustworthy and honest (N = 334, proportion = 0.77, p < 0.001)
Trustworthy and honest			--

Note. For each question, participants read the test "*Would you rather have…*" before being presented with the forced-choice options.

Table 4.
Participant preferences within luxury traits.

	Shares information	Forgiving	Emotionally intelligent	Conscientious about paying back debt
Shares information	--	Shares information (N = 154, proportion = 0.35, 95% CI [0.30, 0.39]) < Forgiving (N = 290, proportion = 0.65, p < 0.001)	Shares information (N = 204, proportion = 0.46, 95% CI [0.41, 0.51]) < Emotionally intelligent (N = 240, proportion = 0.54, p = 0.097)	Shares information (N = 260, proportion = 0.59, 95% CI [0.55, 0.64]) > Conscientious about paying back debt (N = 178, proportion = 0.41, p = 0.003)
Forgiving		--	Forgiving (N = 275, proportion = 0.62, 95% CI [0.58, 0.67]) > Emotionally intelligent (N = 166, proportion = 0.38, p < 0.001)	Forgiving (N = 330, proportion = 0.74, 95% CI [0.70, 0.78]) > Conscientious about paying back debt (N = 114, proportion = 0.26, p < 0.001)
Emotionally intelligent			--	Emotionally intelligent (N = 302, proportion = 0.68, 95% CI [0.63, 0.72]) > Conscientious about paying back debt (N = 142, proportion = 0.32, p < 0.001)
Conscientious about paying back debt				--

Note. For each question, participants read the test "*Would you rather have*…" before being presented with the forced-choice options.

Figure 1.

Average token spending on each trait by budget condition in Study 1. Dark gray bars represent the average amount spent on each trait in the low-budget condition (e.g., necessities). Light gray bars represent the average amount spent on each trait in the high-budget condition after removing spending on necessities (e.g., luxuries).