

**Good looks, mate value, flirting capacity, and choosiness: Exploring  
additional pathways to singlehood**

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**Abstract**

Many individuals are single because they encounter difficulties in attracting an intimate partner. Various factors, such as flirting capacity and self-esteem, could potentially predict singlehood. However, these factors are interconnected and have indirect associations with singlehood. The current study has attempted to identify these associations by analyzing a database derived from a sample of 1,432 Greek-speaking participants. Our analysis examined singlehood in general as well as involuntary singlehood, separately for men and women. Specifically, we have identified four pathways for women: 1) Higher mate value was associated with greater self-esteem, which, in turn, was associated with an increased flirting capacity. This was correlated with a higher probability of being in an intimate relationship rather than being single. 2) Furthermore, higher mate value was associated with increased self-esteem, which, in turn, was associated with greater choosiness. This was linked to a lower probability of being in an intimate relationship than being involuntarily single. 3) Additionally, higher scores in self-perceived good looks were associated with higher mate value, which, in turn, was associated with an enhanced flirting capacity. This was connected to a higher probability of being in an intimate relationship rather than being single. 4) Finally, higher scores in self-perceived good

looks were associated with higher mate value, which, in turn, was associated with greater choosiness. This was associated with a lower probability of being in an intimate relationship than being single. On the other hand, no significant pathways were found for men.

**Keywords:** singlehood; involuntary singlehood; self-esteem; flirting capacity; good looks

## **Introduction**

Many individuals in contemporary post-industrial societies are single, meaning they do not have an intimate partner (Kislev, 2019; Klinenberg, 2012). For instance, a recent study utilized a sample of 7,181 participants from 14 post-industrial nations and found that approximately 38% indicated that they were single (i.e., they did not have an intimate partner) (Apostolou et al., 2023). A different study conducted by the Pew Research Center in the USA found that three-in-ten adults were single, meaning they were not married, living with a partner, or in a committed romantic relationship (source: <https://www.pewresearch.org/short-reads/2023/02/08/for-valentines-day-5-facts-about-single-americans/>). The phenomenon of singlehood is complex, with various interconnected factors explaining it (Apostolou & Michaelidou, 2023). Recent research has attempted to identify the different pathways by which these factors are associated with singlehood. For example, Apostolou and Michaelidou (2023) have found that higher self-esteem was associated with a better flirting capacity (i.e., how good people are in approaching others persuading them to become their intimate partners), which in turn, was associated with a decreased probability to be involuntarily single. The present study aims to contribute to this emerging literature by examining additional pathways to singlehood in general, as well as to involuntary singlehood, by reanalyzing data from the Apostolou and Michaelidou (2023) study. The pathways are not the same for each sex, so we examined each sex separately. Understanding the cause of singlehood is an important endeavor, and it can lead

to better understanding of other phenomena such as poor mental health and misogyny is observed in groups of involuntarily single men (Costello et al., 2022; Grunau et al., 2022).

### **Flirting capacity and self-esteem**

It has been argued that one main reason explaining the relatively high occurrence of singlehood in general, and involuntary singlehood in particular, is the mismatch problem (Apostolou, 2015). More specifically, the mechanisms or adaptations that people carry with them today constitute the product of selection pressures working on humans over many generations. This simply means that these mechanisms have adapted reasonably well to the ancestral human conditions but may not be able to deal very effectively with the demands of the contemporary environment if it is considerably different from the ancestral one, a concept known as the mismatch problem (Crawford, 1998; Li et al., 2017; Tooby & Cosmides, 1990). With respect to mating, several lines of evidence indicate that there was a significant mismatch between ancestral and modern conditions.

To begin with, anthropological, historical, and phylogenetic evidence indicates that in the pre-industrial context, the typical form of long-term mating was arranged marriage, where parents chose spouses for their children (Broude & Green, 1983; Coontz, 2006; Walker et al., 2011). For instance, one study examined the mating patterns of a sample of 190 hunting and gathering societies and found that in about 70% of the cases, marriages were arranged, while only in about 4% of the cases were based on free mate choice (Apostolou, 2007). In addition, anthropological, historical, and physiological evidence indicates that in the pre-industrial context, men frequently monopolized access to women by force, typically by forming alliances to fight other men (Puts, 2010). Anthropological evidence further indicates that, in this setting, both men and women could exercise mate choice in extra-marital relationships, in divorce, and in later marriages (Apostolou, 2017).

Existing evidence strongly suggests that in the pre-industrial context, and thus in ancestral human societies, mating was predominantly arranged or forced, but individuals could still exercise some mate choice. This contrasts with the contemporary post-industrial context, where mate choice is freely exercised. Adaptations involved in mating, which evolved to enable mating success in a context where marriages were arranged or forced, would likely not be effective in dealing with the demands of a modern context where mating is freely exercised (Apostolou, 2015; Goetz et al., 2019). It has been argued that the mechanisms giving rise to flirting capacity have been especially susceptible to the mismatch problem (Apostolou, 2021). In particular, in a context where mating is freely exercised, both men and women need to approach people they usually do not know and attempt to persuade them to become their mates, a process known as flirting. Flirting is cognitively demanding, as it requires people to empathize and choose the right words while avoiding the wrong ones. However, in a context where marriages are arranged or mating is forced, possessing good flirting capacity is not necessary for securing mates. This means that, in ancestral human societies, the selection pressures on developing good flirting skills were rather weak. Consequently, this leads to the prediction that several people today may have a flirting capacity that is inadequate for a context of free mate choice, making them more likely to be single.

Supporting this hypothesis, studies have found that poor flirting skills are a primary reason for being single (Apostolou, 2019, 2021; see also Costello et al. 2023). For instance, in a recent study, Apostolou and Michaelidou (2023) used a sample of 1,432 Greek-speaking participants to examine the effects of 17 possible predictors of singlehood, including flirting capacity. They found that when all other factors were statistically controlled, flirting capacity had a significant effect on relationship status, with lower flirting capacity being associated with a higher probability of being single rather than in an intimate relationship. They also found that self-esteem, defined as one's perceived worthiness as a person (Baumeister, 1993), was an

important predictor of flirting capacity. Accordingly, it was also found that higher self-esteem was associated with a decreased probability of being involuntarily single rather than in an intimate relationship, as it was linked to higher flirting capacity.

This is not the end of the story, however, because self-esteem is not a fixed trait but responds to one's capacities. In particular, it has been argued that self-esteem constitutes an evolved mechanism providing individuals with adaptively relevant feedback about their position in the social world (Barkow, 1980; Kenrick et al., 2010; Leary, 1999). In the domain of mating, we expect that self-esteem would adjust to people's mate value, informing them about their worthiness as potential mates (Brase & Dillon, 2022; Schmitt & Jonason, 2019). This being the case, mate value would be indirectly associated with singlehood through self-esteem and flirting capacity. In particular, we predict that lower perceived mate value would be associated with lower self-esteem, which, in turn, would be associated with poorer flirting capacity and an increased probability of being single rather than in an intimate relationship ( $H_1$ ).

Furthermore, mate value is predicted by traits that people consider desirable in a mate, such as good looks (Edlund & Sagarin, 2014). Thus, we predict further the desirable trait of good looks would be indirectly associated with singlehood through mate value, self-esteem, and flirting capacity. In particular, low scores in perceived good looks would be associated with lower scores in perceived mate value, which would, in turn, be associated with lower scores in perceived self-esteem, and ultimately with lower scores in flirting capacity, resulting in a higher probability of being single rather than in an intimate relationship ( $H_2$ ).

### **Self-esteem and choosiness**

Choosiness constitutes another predictor of singlehood. For instance, one study has found that the more choosy women indicated to be the more likely they were to prefer to be single than to be in an intimate relationship (Apostolou, 2021). Apostolou and Michaelidou (2023) attempted

to examine the effect of choosiness on relationship status, and they have identified an additional pathway to singlehood for women. In particular, women who reported higher self-esteem also reported higher levels of choosiness, and were more likely to be involuntarily single than in an intimate relationship. The interpretation here is that women want to be in an intimate relationship, but due to higher choosiness fueled by high self-esteem, face difficulties in attracting mates. As discussed earlier, this is not the end of the story, as self-esteem is expected to respond to one's own perceived mate value. Accordingly, we predict that higher scores in perceived mate value would be associated with higher scores in self-esteem, which would be associated with higher choosiness that would be associated with an increased probability of being single rather than in an intimate relationship (H<sub>3</sub>).

One factor affecting mate value is physical attractiveness, so we predict further that higher scores in perceived good looks would be associated with higher perceived mate value, which would, in turn, be associated with higher self-esteem, ultimately resulting in an increased probability of being single rather than in an intimate relationship (H<sub>4</sub>). This pathway would mean that individuals who possess high mate value, due to having traits highly desirable in the mating market such as good looks, would also have higher self-esteem, making them choosier. This increased choosiness would inevitably result in more time spent as being single.

### **The current study**

In their original study, Apostolou and Michaelidou (2023) examined direct and indirect effects of 17 variables on involuntary singlehood. Among other thing, they found that for both men and women, self-esteem was associated with flirting capacity, which in turn was associated with relationship status. They also found that self-esteem was associated with choosiness which was associated with relationship status. However, as discussed above, self-esteem is not a constant trait but it can respond to other traits such as one's looks. This being the case, other

traits can have indirect effects on singlehood through self-esteem, and the current study aimed to identify these effects.

In particular, the present study aims to further analyze the dataset of Apostolou and Michaelidou (2023) in order to identify additional pathways to singlehood. Specifically, we aimed to test the following predictions: 1) Lower perceived mate value would be associated with lower self-esteem, which would, in turn, be associated with poorer flirting capacity, resulting in an increased probability of being single rather than in an intimate relationship ( $H_1$ ). 2) Lower scores in perceived good looks would be associated with lower scores in perceived mate value, which would, in turn, be associated with lower self-esteem and lower flirting capacity, ultimately resulting in a higher probability of being single rather than in an intimate relationship ( $H_2$ ). 3) Additionally, we predict that higher scores in perceived mate value would be associated with higher scores in self-esteem, which would be associated with higher choosiness, leading to an increased probability of being single rather than in an intimate relationship ( $H_3$ ). 4) Finally, higher scores in perceived good looks would be associated with higher perceived mate value, which would, in turn, be associated with higher self-esteem, ultimately resulting in a higher probability of being single rather than in an intimate relationship ( $H_4$ ).

Apostolou and Michaelidou (2023) examined the effects of different variables on involuntary singlehood versus being in an intimate relationship status. Still, variables such as self-esteem may also affect other types of singlehood. For example, people with low self-esteem may give up trying to find a mate and may choose to be voluntarily single. Therefore, in the current study, we examined different pathways to involuntary singlehood versus being in an intimate relationship, as well as singlehood (inclusive of all types of singlehood) versus being in an intimate relationship. Additionally, in the original study, significant interactions were found between sex and the different predictors of singlehood, indicating that they affect

each sex differently. Accordingly, in the present research, we examined each sex separately. Finally, we examined whether these pathways were significant for years being single.

## **Methods**

### **Participants**

For our analysis, we employed the dataset of Apostolou and Michaelidou (2023), which included 1,432 (734 women and 698 men) Greek-speaking participants. The mean age of women was 34.8 ( $SD = 10.4$ ) and the mean age of men was 38.7 ( $SD = 11.7$ ). Moreover, 27.6% of the participants were “In a relationship,” 21.3% were “Involuntarily single,” 20.8% were “Married,” 15.8% were “Single between relationships,” 8.7% “Prefer to be single,” and 5.8% “Other.”

### **Materials**

The original study coded for 17 different variables, namely mating effort, sexual functioning, self-perceived mate value, self-esteem, flirting capacity, capacity to perceive signals of romantic interest, shyness, choosiness, BMI, self-perceived good looks, openness, conscientiousness, extraversion, agreeableness, neuroticism, sexual orientation, and having children from previous relationships. In the current study, we focused on good looks, self-esteem, mate-value, choosiness, and flirting capacity, with the rest of the variables entering as co-variates. Self-esteem was measured using the Rosenberg Self-Esteem Scale, which consisted of 10 items (Rosenberg, 1965). Total scores ranged from 10 to 40, with a higher score indicating higher self-esteem. Flirting capacity was measured using a seven-item instrument developed by Apostolou et al. (2019). Mean scores could range from “1” to “5,” with a higher score indicating higher flirting capacity. Perceived mate value was measured using a four-item instrument that participants had to rate in a seven-point scale (Edlund & Sagarin, 2014). A higher mean score indicated a higher mate value. Furthermore, choosiness was measured using a three-item instrument developed by Apostolou et al. (2018). Mean scores could range from



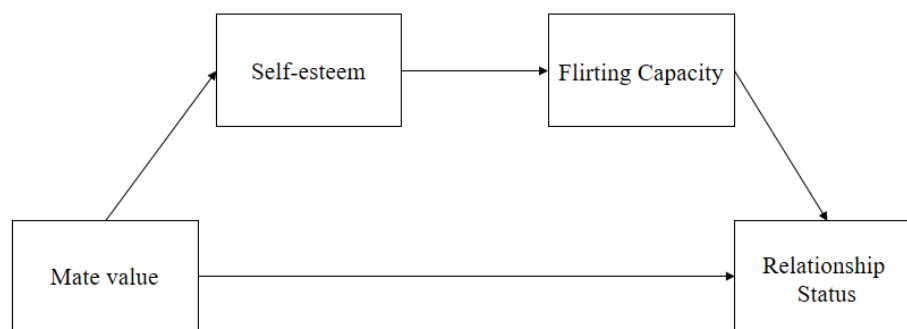
“1” to “5,” with a higher score indicating being more selective in mate choice. In addition, self-perceived looks were measured using a five-item instrument that was developed for this purpose. More specifically, participants were asked to rate themselves in the following traits: “good looking,” “beautiful face,” “beautiful body,” “beautiful eyes” and “charming,” using the following scale: 1 – Strongly disagree, 5 – Strongly agree. Cronbach’s alpha for this measure was .82. A higher mean score indicated higher self-perceived looks.

### **Data analysis**

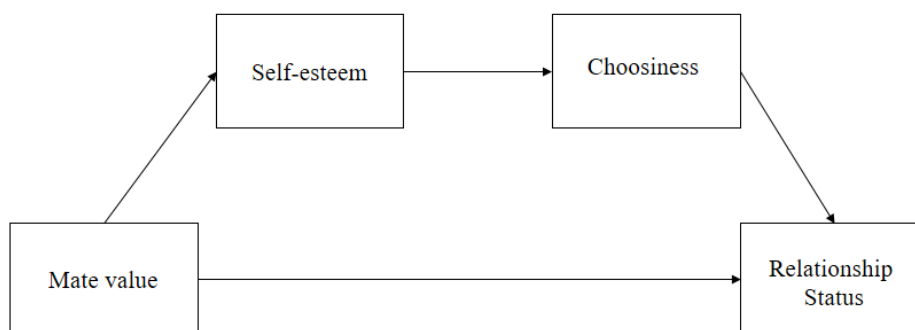
To identify indirect association, we conducted serial mediation analysis using SPSS version 28 and the PROCESS version 4.2 macro. Specifically, we performed a serial mediation analysis (Mediation 1) where self-esteem and flirting capacity served as the mediators, and mate value was the predictor (see Figure 1). Furthermore, we conducted a serial mediation analysis where self-esteem and choosiness acted as the mediators, and mate value was the predictor (see Figure 2). Self-perceived good looks was not included in this analysis as it closely correlates with mate value. The remaining variables were entered as covariates, including mating effort, the capacity to perceive signals of romantic interest, shyness, choosiness, BMI, openness, conscientiousness, extraversion, agreeableness, neuroticism, sexual orientation, and having children from previous relationships. The analysis was performed with two sets of dependent variables, namely single (combining all categories of singles) versus in an intimate relationship (combining "in a relationship" and "married" categories), and involuntarily single versus in an intimate relationship. The original research has found that the included variables predicted relationship status differently for men and women (Apostolou & Michaelidou, 2023). Consequently, we conducted the analysis separately for each sex.

In addition, we conducted a serial mediation analysis (Mediation 2) with mate value, self-esteem, and flirting capacity as the mediators, and self-perceived good looks as the predictor (see Figure 3). As opposed to Mediation 1, Mediation 2 allows us to examine the effect of good

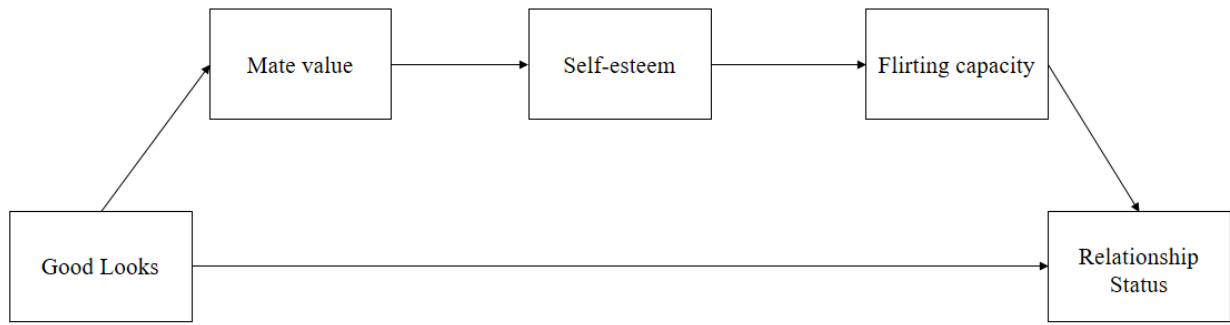
looks on relationship status, when the mate value also enters in the model. Similarly, we performed a serial mediation analysis with mate value, self-esteem, and choosiness as the mediators, and self-perceived good looks as the predictor (see Figure 4). As mentioned earlier, additional variables were included as covariates. The analysis was repeated with the same set of dependent variables (single vs. in an intimate relationship and involuntarily single vs. in an intimate relationship) separately for each sex. In all instances, unstandardized indirect effects were calculated for each of the 10,000 bootstrapped samples, and the 95% confidence interval was computed by determining the indirect effects at the 2.5th and 97.5th



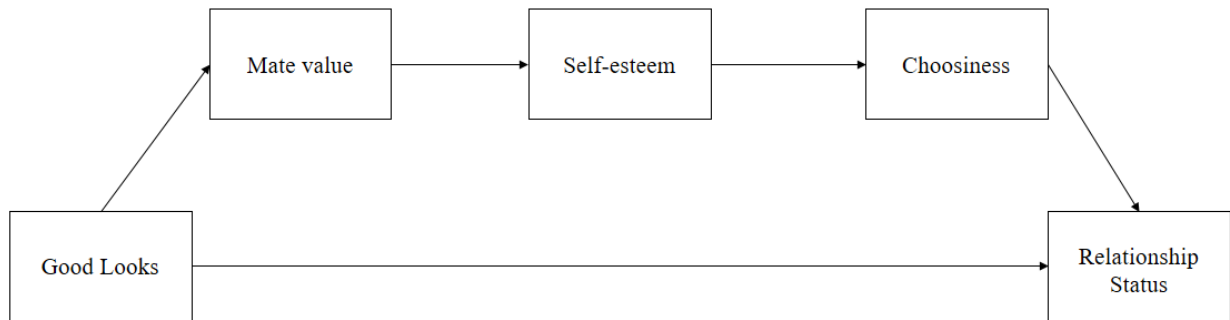
**Figure 1.** The figure above depicts the direct and indirect pathways that mate value is associated with relationship status through self-esteem, and flirting capacity.



**Figure 2.** The figure above depicts the direct and indirect pathways that mate value is associated with relationship status through self-esteem, and choosiness.



**Figure 3.** The figure above depicts the direct and indirect pathways that good looks is associated with relationship status through mate value, self-esteem, and flirting capacity.



**Figure 4.** The figure above depicts the direct and indirect pathways that good looks is associated with relationship status through mate value, self-esteem, and choosiness.

### Mediation 1

The results of the first mediation analysis are presented in Table 1. We can see that, for men, higher self-reported mate value was associated with increased probability to be in an intimate relationship than involuntarily single. In the rest of the cases, there was no direct effect of mate value on relationship status. For single vs. in an intimate relationship and involuntary single vs. in an intimate relationship, there was an indirect association between perceived mate value and relationship status. In particular, one unit increase in mate value was associated with a 2%  $[(1.02-1)*100]$  increase in the probability of being in an intimate relationship versus being

involuntarily single by being associated with higher self-esteem, which in turn, was associated with better flirting capacity. For men, this association was not significant.

With respect to choosiness, there was a significant indirect effect of perceived mate value, but only with respect to involuntary singlehood for women. In particular, one unit increase in perceived mate value was associated with a 5%  $[(1 - 0.95) * 100]$  decrease in the probability to be in an intimate relationship than involuntarily single, by being associated with higher self-esteem, which in turn was associated with higher choosiness. Additionally, with respect to years single, no significant associations were produced.

**Table 1.**

The direct and indirect effect on the relationship status of perceived mate value and perceived good looks.

	<i>Women</i>		<i>Men</i>	
<b>Mediation 1</b>	Single (Aggregate)	Involuntarily	Single (Aggregate)	Involuntarily
Direct effect mate value	0.81 (0.62 – 1.06)	0.90 (0.57 – 1.42)	1.09 (0.84 – 1.43)	1.97* (1.23 – 3.13)
Mate value * Self-esteem*Flirting capacity	1.02* (1.00 – 1.04)	1.05 (0.99 – 1.15)	1.01 (0.99 – 1.04)	1.03 (0.97 – 1.11)
Mate value * Self-esteem*Choosiness	0.99 (0.97 – 1.00)	0.95* (0.90 – 0.99)	0.99 (0.97 – 1.00)	0.98 (0.93 – 1.02)
<b>Mediation 2</b>				
Direct effect good looks	0.70 (.47 – 1.00)	0.62 (0.35 – 1.11)	0.74 (0.52 – 1.05)	1.00 (0.57 – 1.77)
Good looks*Mate value*Self-esteem*Flirting capacity	1.01* (1.00 – 1.02)	1.02* (1.00 – 1.06)	1.01 (0.96 – 1.00)	1.02 (0.98 – 1.07)
Good looks*Mate value*Self-esteem*Choosiness	0.99 (0.99 – 1.00)	0.98* (0.96 – 0.99)	0.99 (0.98 – 1.00)	0.99 (0.96 – 1.01)

\* Significant at .05.

*Note.* The values depict above refer to Odds Ratios (OR). Thus, our analysis examined how specific variables affect the odds to be single versus being in a relationship, and the odds of being involuntarily single versus being in an intimate relationship.

## **Mediation 2**

The results of the second mediation analysis are presented in Table 1, where we can see that there was no direct effect of good looks on relationship status neither for men nor for women. On the other hand, there was an indirect association between good looks and relationship status through mate value, self-esteem, and flirting capacity for both single vs. in an intimate relationship and involuntarily single vs. in an intimate relationship. For instance, one unit increases in self-perceived looks was associated with a 2% increase in the probability to be in an intimate relationship than involuntarily single by being associated with higher perceived mate value, which was associated with higher self-esteem, which was associated with better flirting capacity. This association was not found for male participants. Furthermore, no significant associations were produced for years single.

With respect to choosiness, for women there was a significant indirect association but only for the case of involuntary singlehood. In particular, one unit increase in self-perceived looks was associated with a 2% decrease in the probability to be in an intimate relationship than involuntarily single by being associated with higher perceived mate value, which was associated with higher self-esteem, which was associated with higher choosiness. This association was not significant for male participants. In addition, only for female participants the path mate value - self-esteem – choosiness – years single was significant at the 5% level [0.06 (CI95: 0.01 – 0.13)]. Also, the path good looks - mate value - self-esteem – choosiness – years single was significant at the 5% level [0.03 (CI95: 0.00 – 0.07)]. Here, one unit increase in perceived good looks was associated with a 0.03 years increase in the years being single.

## **Discussion**

In the current study, we found that, for women, higher perceived mate value was associated with higher self-esteem, which, in turn, was associated with greater flirting capacity. This increased flirting capacity was then associated with a higher probability of being in an intimate

relationship rather than single ( $H_1$ ). Additionally, higher perceived mate value was associated with higher self-esteem, which, in turn, was associated with increased choosiness. This heightened choosiness was associated with a lower probability of being in an intimate relationship than involuntarily single ( $H_3$ ). Furthermore, higher scores in perceived good looks were associated with higher perceived mate value, which, in turn, was associated with increased flirting capacity, leading to a higher probability of being in an intimate relationship rather than being single ( $H_2$ ). Finally, higher scores in perceived good looks was associated with higher perceived mate value, which, in turn, was associated with increased choosiness, resulting in a lower probability of being in an intimate relationship than being involuntarily single ( $H_4$ ). Yet, no significant pathways were found for male participants.

Our findings can be interpreted to mean that, for women, having better looks increases their mate value, and higher mate value increases their self-esteem, which, in turn, increases their flirting capacity, consequently increasing the likelihood of being in an intimate relationship than being single. However, better looks have the opposite effect through a different pathway: Women who have better looks have higher mate value and, therefore, higher self-esteem, making them choosier and more likely to be involuntarily single than in an intimate relationship. In simpler terms, women with better looks are better at flirting, making them more likely to attract an intimate partner, but they are also more choosy, which makes them less likely to settle on an intimate partner.

Although these two indirect effects seem to counteract each other, this does not necessarily mean that these pathways are not significant in the context of singlehood. Specifically, for some women, self-esteem may have a stronger effect on their flirting capacity and a weaker effect on their choosiness. In such a scenario, better looks would be associated with a reduced likelihood of being involuntarily single. For other women, self-esteem may have a weaker effect on their flirting capacity and a stronger effect on their choosiness. In this

scenario, women with better looks would be more likely to be involuntarily single than in an intimate relationship. Moreover, the good looks – mate value – self-esteem – flirting capacity pathway could be interpreted as "negative" in the sense that issues with physical attractiveness could hinder women from obtaining an intimate partner. On the other hand, the good looks – mate value – self-esteem – choosiness pathway could be interpreted as "positive" in the sense that it would be advantageous for women with desirable qualities such as good looks to remain without an intimate partner for some time in order to find a good one.

We also need to note that the indirect associations we have identified were small, indicating that the pathways we identified explain only a small portion of the variation in relationship status. Furthermore, it is unclear why these pathways were not significant for men. We would expect that higher mate value in men would be associated with higher self-esteem, which, in turn, would be associated with higher flirting capacity and a reduced probability of being single. One possibility is that this association is present for men but weaker than in women, and our study may not have had enough statistical power to detect it. Consistent with this interpretation, the Odds Ratios were in the predicted direction. Nonetheless, even if this was the case, it remains unclear why the indirect association is weaker in men. Given that, at least in the Greek cultural context, men are expected to take the initiative in flirting, we might expect the opposite to be true – that is, the indirect effect to be stronger in men than in women. Future studies should further explore the observed sex differences.

Our study demonstrates the complexity of mating in general and singlehood in particular. Our choice to study specific pathways was informed by the evolutionary framework, and our study demonstrates its usefulness in guiding research when studying complex phenomena such as singlehood. It further emphasizes the importance of examining both direct and indirect effects. Consistent with previous research (Apostolou & Philippou, 2024), we found that good looks have no direct effect on relationship status, which, in itself, may sound



counterintuitive. However, as we found here for women, good looks exhibit two opposite-direction indirect effects. Thus, researchers in this field should not confine themselves solely to direct effects but should also investigate indirect pathways. Interestingly, the pathways we identified for women were not significant for men, suggesting that different factors may affect the relationship status of men and women differently. Therefore, research in this area should separately examine these effects rather than combining data from both sexes. Moreover, our study points to directions for future research in the area, that would aim to address how self-rated good looks and mate value compare with objective ratings (e.g., facial symmetry measures, peer ratings), examine in more depth how choosiness affects involuntary singlehood (e.g., identify the traits relate to choosiness), and examine the weight carried by self-rated good looks, possibly over and above self-rated mate value, self-esteem, and flirting capacity. Our findings also have practical implications for therapists and counselors. By understanding the various paths to singlehood, they can better assist their clients in their mating domain. For instance, if a female client exhibits poor flirting capacity, therapists can trace this back to low self-esteem, which may, in turn, be linked to looks. Interventions aimed at enhancing appearance could potentially lead to improved flirting skills and a higher likelihood of attracting a mate.

One important limitation of the present study is that the dataset is derived from a cross-sectional design, meaning that causal relationships cannot be definitively established. For example, we have argued that self-esteem responds to mate value, but it is also possible that mate value may respond to self-esteem. We believe that both effects are at play here, and future studies should attempt to distinguish between these different effects, perhaps by using longitudinal designs. Moreover, mate value is predicted by several traits desirable in prospective mates, such as social status and control of wealth (Edlund & Sagarin, 2014). However, in the current study, we only examined the effect of good looks, and future studies

should investigate the effects of other desirable traits. Additionally, we used self-report measures, where participants indicated how they perceived their own mate value and looks, and future studies could attempt to replicate our findings using more objective measures.

Singlehood is a complex phenomenon with many interacting factors at play. The current research has found that, for women, good looks and mate value are indirectly associated with singlehood through self-esteem, flirting capacity, and choosiness. More research is required, however, to identify additional pathways to relationship status.

## References

- Apostolou, M. (2007). Sexual selection under parental choice: The role of parents in the evolution of human mating. *Evolution and Human Behavior*, 28(6), 403–409. <https://doi.org/10.1016/j.evolhumbehav.2007.05.007>
- Apostolou, M. (2015). Past, present and why people struggle to establish and maintain intimate relationships. *Evolutionary Behavioral Sciences*, 9, 257-269. <https://doi.org/10.1037/ebs0000052>
- Apostolou, M. (2017). Individual mate choice in an arranged marriage context: Evidence from the Standard Cross-Cultural Sample. *Evolutionary Psychological Science*, 3, 193-200. <https://doi.org/10.1007/s40806-017-0085-9>
- Apostolou, M. (2019). Why men stay single: Evidence from Reddit. *Evolutionary Psychological Science*, 5, 87–97. <https://doi.org/10.1007/s40806-018-0163-7>
- Apostolou, M. (2021). Involuntary singlehood and its causes: The effects of flirting capacity, mating effort, choosiness and capacity to perceive signals of interest. *Personality and Individual Differences*, 176. <https://doi.org/10.1016/j.paid.2021.110782>
- Apostolou, M., & Michaelidou, E. (2023). Why people face difficulties in attracting mates: An investigation of 17 probable predictors of involuntary singlehood. *Personality and Individual Differences*, 216. <https://doi.org/10.1016/j.paid.2023.112422>

- Apostolou, M., Papadopoulou, I., Christofi, M. & Vrontis, D. (2019). Mating performance: Assessing flirting skills, mate signal-detection ability, and shyness effects. *Evolutionary Psychology*, 17, e3. <https://doi.org/10.1177/1474704919872416>
- Apostolou, M., & Philippou, R. (2024). What predicts involuntary singlehood: Investigating the effects of self-esteem and having desirable traits in a Greek-speaking sample. *Evolutionary Behavioral Sciences*, 18(1), 1–10. <https://doi.org/10.1037/ebs0000299>
- Apostolou, M., Shialos, M., Kyrou, E., Demetriou, A. & Papamichael, A. (2018). The challenge of starting and keeping a relationship: Prevalence rates and predictors of poor mating performance. *Personality and Individual Differences*, 122, 19-28. <https://doi.org/10.1016/j.paid.2017.10.004>
- Apostolou, M., Sullman, M., Birkás, B., Błachnio, A., Bushina, E., Calvo, F., Costello, W., Dujlovic, T., Hill, T., Lajunen, T. J., Lisun, Y., Manrique-Millones, D., Manrique-Pino, O., Meskó, N., Nechtelberger, M., Ohtsubo, Y., Ollhoff, C. K., Przepiórka, A., Putz, Á., ... Font-Mayolas, S. (2023). Mating performance and singlehood across 14 Nations. *Evolutionary Psychology*, 21(1), 1-12. <https://doi.org/10.1177/14747049221150169>
- Barkow, J. (1980). Prestige and self-esteem: A biosocial interpretation. In D. R. Omark, F. F. Strayer, & D. G. Freedman (Eds.), *Dominance relations: An ethological view of human conflict and social interaction* (pp. 319–332). Garland STPM Press.
- Baumeister, R. F. (Ed.). (1993). *Self-esteem: The puzzle of low self-regard*. Plenum Press. <https://doi.org/10.1007/978-1-4684-8956-9>
- Brase, G. L., & Dillon, M. H. (2022). Digging deeper into the relationship between self-esteem and mate value. *Personality and Individual Differences*, 185, 111219. <https://doi.org/10.1016/j.paid.2021.111219>

- Broude, G. J., & Green, S. J. (1983). Cross-cultural codes on husband-wife relationships. *Ethnology*, 22, 263–280.
- Coontz, S. (2006). *Marriage, a history: How love conquered marriage*. Penguin.
- Costello, W., Rolon, V., Thomas, A. G., & Schmitt, D. (2022). Levels of well-being among men who are incel (Involuntarily Celibate). *Evolutionary Psychological Science*, 8(4), 375-390. <https://doi.org/10.1007/s40806-022-00336-x>
- Costello, W., Rolon, V., Thomas, A. G., & Schmitt, D. P. (2023). The mating psychology of incels (involuntary celibates): Misfortunes, misperceptions, and misrepresentations. *Journal of Sex Research*. <https://doi.org/10.1080/00224499.2023.2248096>
- Crawford, C. (1998). Environments and adaptations: Then and now. In C. Crawford, & D. L. Krebs (Eds.), *Handbook of evolutionary psychology* (pp. 275–302). Erlbaum.
- Edlund, J. E., & Sagarin, B. J. (2014). The Mate Value Scale. *Personality and Individual Differences*, 64, 72–77. <https://doi.org/10.1016/j.paid.2014.02.005>
- Goetz, C. D., Pillsworth, E. G., Buss, D. M., & Conroy-Beam, D. (2019). Evolutionary mismatch in mating. *Frontiers in Psychology*, 10, 2709. <https://doi.org/10.3389/fpsyg.2019.02709>
- Grunau, K., Bieselt, H. E., Gul, P., & Kupfer, T. R. (2022). Unwanted celibacy is associated with misogynistic attitudes even after controlling for personality. *Personality and Individual Differences*, 199, 111860. <https://doi.org/10.1016/j.paid.2022.111860>
- Kenrick, D. T., Griskevicius, V., Neuberg, S. L., & Schaller, M. (2010). Renovating the pyramid of needs: Contemporary extensions built upon ancient foundations. *Perspectives on Psychological Science*, 5(3), 292–314. <https://doi.org/10.1177/1745691610369469>
- Kislev, E. (2019). *Happy singlehood: The rising acceptance and celebration of solo living*. University of California Press.

- Klinenberg, E. (2012). *Going solo: The extraordinary rise and surprising appeal of living alone*. Duckworth Overlook.
- Leary, M. R. (1999). Making sense of self-esteem. *Current Directions in Psychological Science*, 8(1), 32–35. <https://doi.org/10.1111/1467-8721.00008>
- Li, N.P., van Vugt, M., & Colarelli, S.M. (2017). The evolutionary mismatch hypothesis: Implications for psychological science. *Current Directions Psychological Science*, 27, 38–44. <https://doi.org/10.1177/0963721417731378>
- Puts, D. A. (2010). Beauty and the beast: Mechanisms of sexual selection in humans. *Evolution and Human Behavior*, 31, 157-175. <https://doi.org/10.1016/j.evolhumbehav.2010.02.005>
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.
- Schmitt, D. P., & Jonason, P. K. (2019). Self-esteem as an adaptive sociometer of mating success: Evaluating evidence of sex-specific psychological design across 10 world regions. *Personality and Individual Differences*, 143, 13-20. <https://doi.org/10.1016/j.paid.2019.02.011>
- Tooby, J., & Cosmides, L. (1990). The past explains the present: Emotional adaptations and the structure of ancestral environments. *Ethology and sociobiology*, 11(4-5), 375-424. [https://doi.org/10.1016/0162-3095\(90\)90017-Z](https://doi.org/10.1016/0162-3095(90)90017-Z)
- Walker, R. S., Hill, K. R., Flinn, M. V. & Ellsworth, R. M. (2011). Evolutionary history of hunter-gatherer marriage practices. *PLoS ONE*, 6, e19066. <https://doi.org/10.1371/journal.pone.0019066>