PS3200- Project

Project supervisor: Nicholas Furl

Word Count: 6,596

What role does risk aversion play in relation to dating preferences and the optimal stopping problem?

Abstract

This study aims to examine how participants perform compared to a computer model on the optimal stopping problem in relation to dating preferences. Furthermore, it considers whether risk aversion, particularly for social risks, plays a role in the strategies that people use to choose a date. To test the optimal stopping problem, 39 participants rated 90 faces for attractiveness three times and an average rating was taken from this for each face. They then had to choose the person that they wanted to ‘date’ out of a sequence of 12 of the previously rated faces. This was compared to the computer model to see how long they searched for in the sequence and the rank of the face that they chose. Participants also completed a behavioural measure of riskiness and a questionnaire to assess their social and non-social risk taking. It was found that participants searched for longer than the computer model but ended up with a suboptimal ‘date’. There was no significant effect of risk aversion on how long people searched or the rank that they achieved. These results further our understanding of the optimal stopping problem and people’s bias to search through faces, however there are no significant findings for the impact of individual differences.

Introduction

Dating has become an integral aspect of society and has come to play an important role in human interaction. Many areas of psychology have shown a keen interest in the factors involved in dating preferences. This interest in dating is something that has been important all throughout history as it is a biological need for humans. Examples of people’s dating strategies date back as far as the 1600s. For example, Johannes Kepler interviewed a sequence of 11 potential wives after his first marriage ended and then went back to choose one of the earlier candidates despite interviewing people after them. This type of dating strategy is common in modern society and is illustrated in the advancement of technology such as dedicated dating sites and apps. These apps involving searching through a series of potential candidates and choosing the best one from those that you have viewed. Therefore, choosing a date and the strategies involved in this are more prevalent today than ever. There have been a number of questions asked, such as what qualities people look for in a mate and how people know when they should stop searching and settle down with someone. These types of dating decisions are common in nature and daily life. The idea of knowing when to stop searching for a partner and settling down when you cannot see what is coming in the future is a variation on the ideas put forward in the secretary problem.

The secretary problem refers to hiring the best secretary out of a selection of applicants. The candidates must be interviewed sequentially and you cannot go back to someone you have already rejected (Ferguson, 1989). This work on the secretary problem has led to the formation of a model that predicts when the best time to stop searching through a sequence of options is in order to find the optimal outcome. The model works by searching through the first third of the applicants and then selecting the next candidate that performs the best compared to those seen so far. The main research question within this study focuses on the optimal stopping theory which forms the basis of the secretary problem. The optimal stopping problem refers to whether people stop searching through a series of options too early or too late and miss out on their optimal choice. In terms of dating, this relates to how people know when to accept or reject a partner when they cannot see what is coming in the future. In particular, this study considers what strategies people employ to come to a decision of when to stop and how individual differences, namely riskiness, can have an impact on these. By using a computational model like those used in the optimal stopping theory, we can assess whether people have made the optimal choice with the mate that they choose or whether people are prone to make poor decisions.

Previous research into the optimal stopping problem has been carried out on both humans and from observing non-human animals. Seale and Rapoport (1997) carried out research based around the secretary problem and hiring behaviours. Fifty participants were required to view a series of applicants for a job, which were seen in a random order of ability. Next, participants had to go through and either hire the applicant or view the next one. This continued until the subject had either made a decision or had ‘interviewed’ all the applicants. If this happened then they revealed the rankings of all participants at the end. If the participant had made the correct selection then they were rewarded with money. They found that people tend to stop searching too early compared to the optimal policy and end up with suboptimal outcomes. Although this research does not directly focus on the dating strategies of humans, it does provide evidence that people have a tendency to under search for information when they have to make the optimal decision. Seale and Rapoport suggest that this bias to end the search early could be the result of “endogenous search costs”, such as just wanting to end the experiment earlier. However, it is possible that this could actually come from a fear of putting themselves at risk because if they search until the end of the sequence they risk missing the optimal choice and leaving with no money. It would therefore be interesting to see in the current study whether humans replicate this fear to put themselves at risk when searching for a mate, particularly when considering the difference between risky and more risk averse participants.

However, even though it is referred to as the ‘fiancé problem’, until recently there has been very little research into the strategies that humans use to search for attractive mates. Most of the research that has been conducted previously is centred around the idea of the secretary problem and has not mentioned any link to dating. Therefore, it is important to consider research on non-human animals because, although it isn’t directly applicable to humans, this may offer an insight into the mating strategies of animals in general. There is sufficient literature into the strategies that non-human animals use and this research tends to show that they also stop searching too early and end up with poor outcomes. For example, research suggests that female pied flycatchers tend to spend less time searching through a series of potential mates as it can be costly for them to waste time and prevent breeding from happening quickly (Cotton, Small and Pomiankowski, 2006). However, they also suggest that if a female is of a higher quality then they will be more likely to spend more time rejecting potential mates until they find one of a higher quality as they can afford to be choosier. This leaves mixed results in relation to how non-human animals search for mates, which means that further research into human search strategies is needed.

Despite there not being a great deal of research into the optimal stopping problem in relation to dating, there has been some recent research into the dating habits within humans. This research has found the opposite results to the early human studies on the secretary problem and the research into non-human animals. Furl et al (in prep) used a facial attractiveness paradigm to compare human searches against the model’s “optimal strategies”. In this research, participants were required to rate a series of faces for their attractiveness and then look through a sequence made from some of those faces and select the person that they want to ‘date’. This was similar to the secretary problem as they could not return to a face once they had rejected it and could not see who was coming up in the future. The person that they chose as their ‘date’ was compared to the computer model’s optimal choice to see how highly ranked their ‘date’ was out of those in the sequence. Humans were found to still choose suboptimal partners but this was actually as a result of them searching for too long, rather than for not long enough. Subjects spent more time looking at faces than the model but this time was used ineffectively as they ended up choosing less attractive faces than the model. This could be down to the fact that people just enjoy searching through faces and therefore they wanted to look through a lot more of the sequence. Research has shown that people have this preference for and an attentional bias towards looking at faces rather than other stimuli from infanthood (Leppanen, 2016). This bias for looking at faces could link to the recent rise in dating apps, such as Tinder, which seem to become almost addictive. This requires people to search through a number of candidates based on their photos and choose whether to accept or reject them, similar to the procedure used in the study. These dating apps also do not give the option to go back to someone that you had previously rejected so this is again similar to the difficulties outlined in the optimal stopping problem. This could explain people’s desire to search through faces as it is something that is a prevalent part of dating in today’s society.

As well as considering the importance of the optimal stopping problem and comparing participants’ choices to the optimal choice of the model, this research aims to assess whether there are individual differences here. Individual differences play a huge role in how people behave in social situations, especially in intimate situations such as dating. The personality trait that will be focused on within this research is risk aversion. This study considers whether those who are more risky employ different dating strategies in comparison to those who are not risky. In particular, this research considers whether people who are riskier are likely to search through fewer options than less risky people and take the chance of missing something later in the sequence. As well as considering how long risky people search for compared to risk averse participants, it is also important to observe whether they end up with a higher ranked face than those who are less risky. As dating is a very social behaviour in humans, it is particularly important within this research to assess participants based on both their social and non-social risk taking to see if there is a difference in how they perform in the task based on these types of riskiness. So far there has been no research into the direct link between risk aversion and people’s dating strategies and therefore this is a novel and important area to consider further. It is particularly important with the current rise in dating apps, like Tinder, as people who are riskier may be more likely to use such apps. If someone is riskier then it is probable that they would be more inclined to use dating apps and make a decision to date someone based off of minimal information. It is therefore an interesting area to look into, to see if those who are riskier and more likely to use dating apps would search for less time for a date than more risk averse people as they are used to making quick dating decisions.

To examine the optimal stopping problem in terms of dating, this research required participants to carry out a face attractiveness rating task and choose ideal dates out of a random sequence made from 12 of the previously rated faces. When they chose to stop in the sequence was then compared to the model’s optimal place to stop to assess whether participants searched for too long or not long enough. The participant’s choice of date was also compared to the model to assess whether they chose a higher or lower ranked face. To rate the risk aversion of each participant, they completed a behavioural measure that assessed their financial risky behaviour, and a self-report questionnaire that measured their social and non-social risk taking. By including both a financial risk measure and considering other types of social risk in the questionnaire, this covers all bases so that it doesn’t only focus on one area of risk that someone may not be involved with while ignoring others that they may score highly in. This means that there will be an inclusive result for their overall risk taking habits.

We hypothesise that participants will search through more options before making a decision than the computational model but end up with poorer ranked outcomes. This is due to people’s bias towards looking and faces and their desire to search for longer through the sequence. We also hypothesise that participants who score higher for risk aversion will search through more faces than those who are lower in risk aversion. It is predicted that those who are more risk averse will be less likely to rush into deciding without considering what is to come than those who are riskier. We predict that those who score highly on social risk taking, compared to non-social risk taking, will stop searching sooner as they are likely to be riskier in social situations such as finding a date.

Methods

*Participants*

We used opportunity sampling to find 39 participants (12 males and 27 females). All participants were university students with a mean age of 20.6 years (SD= 0.85), ranging from 18 to 22 years. This study gained ethical approval by Royal Holloway University psychology departments’ internal ethics committee.

*Materials*

To measure the amount of views and choices of faces that participants made, a programme was run on MATLAB. This programme contained a database consisting of colour photos of 90 faces, which were used to create the face-rating task. The ratings for each face were compared to a computational model which uses an algorithm to learn about each sequence and make the optimal choice that each participant should ideally make. This model, that was put forward in the secretary problem (Ferguson, 1989), works by looking through 37% of options to get an idea of the quality thus far. The model then suggests that you pick the next person that is above the quality so far as this has been worked out to be the best that you can do. For the behavioural measure of risk, a computerised lottery-choice decision task was used (Holt and Laury, 2002). This task consists of two columns with different likelihoods of winning money on either side (see table 1 for illustration). On the left side, the amounts of money available to win were much closer together (£2.10 or £1.60), making this side the much safer option as participants are less likely to lose money. On the right side, participants could win either £3.20 or £0.10, thus making it much riskier to go for this side as they have the potential to receive less money. However, the likelihood of winning each amount of money increases/ decreases as you move up the line. For example, at the bottom there is 100% chance of winning £2.10 or 90% of winning £0.10 on the other side, thus all participants will choose to stick to the left side. These decrease in 10% increments as you move up the line, so that at the end participants are shown a 90% chance of receiving £1.60 or 100% chance of receiving £3.20, which means all participants will switch to the right side. Those who are more risk-taking are likely to switch to option B at an earlier point that those who are more risk-averse.

Table : Lottery-Choice Decision Task (Holt and Laury, 2002).

|  |  |
| --- | --- |
| Option A | Option B |
| 10% of £2.00, 90% of £1.60 | 100% of £3.85, 0% of £0.10 |
| 20% of £2.00, 80% of £1.60 | 90% of £3.85, 10% of £0.10 |
| 30% of £2.00, 70% of £1.60 | 80% of £3.85, 20% of £0.10 |
| 40% of £2.00, 60% of £1.60 | 70% of £3.85, 30% of £0.10 |
| 50% of £2.00, 50% of £1.60 | 60% of £3.85, 40% of £0.10 |
| 60% of £2.00, 40% of £1.60 | 50% of £3.85, 50% of £0.10 |
| 70% of £2.00, 30% of £1.60 | 40% of £3.85, 60% of £0.10 |
| 80% of £2.00, 20% of £1.60 | 30% of £3.85, 70% of £0.10 |
| 90% of £2.00, 10% of £1.60 | 20% of £3.85, 80% of £0.10 |
| 100% of £2.00, 0% of £1.60 | 10% of £3.85, 90% of £0.10 |

As well as the behavioural measure of risk, a self-report questionnaire was also used. The questionnaire used was the domain-specific risk-taking scale (DOSPERT). Originally a 40-item questionnaire (Weber, Blais and Betz, 2002), this study used the revised 30 item scale (Blais and Weber, 2006) as it was a shorter questionnaire and was more accessible to the target group as it is applicable for all ages and cultures. This scale includes examples of different behaviours that the participants could theoretically partake in. These behaviours fall into five different categories- social decisions, financial decisions, health/safety, recreational and ethical. Participants were asked to rate each item on a scale of one to seven (one being low and seven being high) on how likely they would be to carry out the behaviour, how risky they perceive it to be and the expected benefits that they feel they would receive from doing it. In this area of research, the social aspects involved within risk taking behaviours are the most important to consider in relation to the optimal stopping problem. Therefore, to score the DOSPERT results, the average scores for the social decisions from each participant were taken to assess their social riskiness. As well as looking at their social scores, the average for all the other categories were taken to assess each participants’ ‘non-social’ risk-taking behaviours. Furthermore, as this study hopes to assess how risky someone actually is, only the scores of how likely they were to carry out the act were used.

*Procedure*

To assess the optimal stopping problem, participants first were asked their preferred gender for the faces that were going to rate. Next, participants completed a computer task on MATLAB in which they rated the attractiveness of 90 faces on a scale of one (least attractive) to nine (most attractive). This rating process was completed three times so that an average rating for each face could be taken. Participants then completed a short distractor task in which they had 2 minutes to answer 10 algebra questions before completing the second part of the task. For the next part, participants were shown five separate sequences, each containing 12 random faces from the previous rating task. As the sequences are created using a completely random selection of faces, there was no guarantee that faces from the original line up would come up within any of the sequences. Participants were asked to choose their ideal date from the line-up, pressing one on the keyboard to reject the person and two to accept them as their date. The faces were shown one by one on the screen and once a face was accepted they could not see the rest of the faces in the sequence as they were blanked out with grey squares. If the participant did not choose to accept any of the faces within the sequence, they would have to accept the final face in the sequence as their date. After each date was chosen from the sequences, the participants were asked to rate how rewarding this date was to them on a scale of one to nine (one being not rewarding and nine being very rewarding). These ratings were not analysed, however they just created a sense of reward for the participants.

For the second computer task, to measure how risky people are in a ‘realistic’ monetary situation, participants were assessed on their likelihood to risk gambling with imagined money. This used the lottery-choice decision task. Participants were asked to decide on a place to switch from the left column to the right and thus accept all the further payments from that side. They are only allowed to make one switch between the columns. The riskier the person is, the sooner they will switch to the right side as this is the ‘riskier’ side.

After completing both computerised tasks, participants then carried out the DOSPERT questionnaire to assess their views on their own risk-taking behaviour. As well as measuring this, participants also had room to fill in their age and gender on the questionnaire.

To avoid order effects the study was counterbalanced, with half of the participants completing the face rating task followed by the behavioural risk taking task, and vice versa for the other half of the participants. All the participants completed the questionnaire at the end, after the other two tasks, to avoid them being able to work out what the study was measuring.

*Design and Analysis*

There were four independent variables: the agent taking part in the task (the model or the human), the social risk taking score, the non-social risk taking score and the behavioural risk score. There were two dependent variables. The first was the average number of faces that the model and the human viewed before choosing their date. The second was the average rank of the dates that the agent chose. This rank was computed by looking at which face the participants chose in the sequence and how highly this face was previously rated out of the 90 faces seen before. If it was a highly-rated face before then they would have a higher rank than if they chose a face from the sequence that they had previously rated low. To test for differences between the human and model in the optimal stopping problem task, two one-way repeated measures ANOVAs were used. To analyse whether risk taking is a predictor of the amount of views the participant takes to choose a date and how satisfactory the date was, a regression was carried out for each of the three risk measures related to both the rank and view scores. A subsequent hierarchical regression that tested whether interactions between gender and risk variables improved variability explained compared to models with only risk taking variables was also carried out.

Results

We found that the model viewed fewer options while achieving higher ranked faces compared to the human agents (see table 2 for descriptive statistics). This resulted in main effects of agent on both views and ranks (F (1, 38 = 15.92, p < 0.01), (F (1, 38) = 19.84,

p < 0.01).

Table : Descriptive Statistics.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Mean | Standard Deviation | N |
| No. of Subject Views | 7.87 | 1.64 | 39 |
| No. of Model Views | 6.52 | 1.29 | 39 |
| Subjects Rank | 9.61 | 1.28 | 39 |
| Model Rank | 10.68 | 0.87 | 39 |

As this research is primarily focusing on dating, a correlation was carried out to see whether gender predicts the amount of views that participants made or the rank that they achieved as gender can play an important role in dating. It was found that there was no significant correlation between gender and the amount of faces that they viewed (r = -0.04, p = 0.4). There was also no significant correlation between gender and the rank that they achieved (r = 0.02, p = 0.44).

We used regressions to test whether views and ranks could be predicted by social risk-taking, non-social risk taking and behavioural risk. All of these predictors proved non-significant (P > 0.05) expect for behavioural risk predicting ranks (r = -0.32, F (1, 37) = 4.12,

p = 0.02). As this showed a negative correlation, this implies that the riskier people tend to pick lower ranked faces. When breaking this down by looking at gender (see figure 1), this shows that the effect is only present in females. See Table 3 for the associated correlation coefficients.

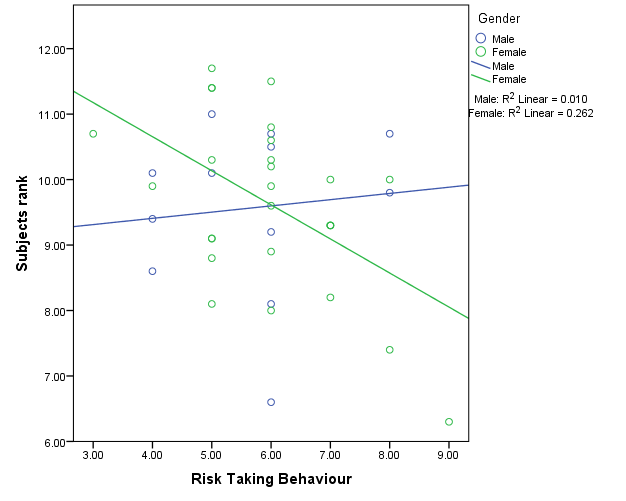


Figure : Correlation between rank and behavioural risk, as shown by gender.

Table 3: Correlation Coefficients

|  |  |  |
| --- | --- | --- |
|  | *r* value | *p* value |
| Social risk taking x Number of views | 0.07 | p = 0.33 |
| Non-social risk taking x Number of views | 0.20 | p = 0.11 |
| Behavioural risk x Number of views | 0.22 | p = 0.08 |
| Social risk taking x Average rank | -0.12 | p = 0.24 |
| Non-social risk taking x Average rank | -0.25 | p = 0.06 |
| Behavioural risk x Average rank | -0.32 | p = 0.02 |

The final aspect that was tested was whether the amount of variability explained by the single predictor models reported above could be improved by including an additional predictor of face-sex and the interaction of face-sex and the risk-taking variables. However, adding these predictors did not significantly improve the R squared for any of the regressions (P > 0.05). Although the face-sex by behavioural risk interaction did not show a significant result, it was incredibly close to being significant (P = 0.06). However, this is still nevertheless not significant but could be an interesting area to consider further.

Discussion

This research considered two main questions. Firstly, it looked at whether people searched through more faces when choosing a ‘date’ than a computational model and the rank of the face that both the subject and the model chose. As well as this, this research looked at the impact that risk aversion has on these dating preferences and if those that are high in risk aversion would search through more faces than those who are low in risk aversion. In particular, this study considered the impact of social riskiness on dating choices. The results of this study emulated previous research by Furl et al (in prep), in that participants searched through more options than the model but still ended up with a lower ranked date than that of the model. Although this contradicts some of the previous research that suggests people will under search through the options, this could be due to our habit of wanting to search through faces. As the research that previously suggested that humans would not search for long enough is quite dated, this shift to participants looking for too long could be a result of the current dating culture and the emergence of dating apps that contain a succession of faces to rate. As a result of these cultural changes in dating this could be why the data now is consistently showing a preference for searching through faces.

For the association between risk taking and participants’ views and rank scores, it was found that risk was not a significant predictor of views or ranks achieved, apart from with the behavioural risk as a measure of participants’ rank score. There was no significant difference in the ranks achieved based on scoring highly on either social risk taking or non-social risk taking. These non-significant results could be because it was not actually a very risky task. The participants were not required to take a big risk during the study as they did not have anything to lose because it was not a real ‘date’. Therefore, they might not have behaved in a risky manner because they did not consider it to be necessary. If there was more of an incentive or real-life risk involved then they might have displayed behaviours more typical of risky people. Furthermore, the measures of risk within the study were both different types of self-reports about social risks such as sexual behaviour and other personal issues. This means that people might have lied about the tasks that they would participate in out of social desirability and not wanting to share their honest feelings. Therefore, they might have scored lower on risk taking than they actually are out of an attempt to avoid sharing too much information about themselves. In future research, it would be useful to measure risk aversion in a way that does not solely rely on the participant reporting what they would do in a situation but measuring it in a more realistic situation.

This research also found that there was a negative correlation between behavioural risk and rank for females but not males. This means that females performed more poorly on picking a highly rated ‘date’ if they scored higher in the behavioural risk task but males did not. This could be because females scored more highly on the behavioural risk measure than men so this had more of an impact on how well they performed on the sequential dating task. Also, there was a major difference in the number of females that took part in the study compared to males (27 compared to 12) and this could be why there was no significant difference found for males. If more males were involved in the study then they could have shown more of a range in their behavioural risk which could have had a significant impact on their ranks. The reason that females who scored highly in behavioural risk might have ended up with a lower ranked face could be because those who are riskier in this way could be more likely to rush into choosing a date. This would be an important area to consider further to find out why there is this difference between males and females.

Despite this research being novel in terms of looking at risk aversion and dating strategies, and furthering the results of previous literature on the optimal stopping problem, there are some problems with this study. A potential limitation of this research, and perhaps a reason why people ended up with suboptimal outcomes when choosing a ‘date’, is that participants tended to lose interest whilst rating the faces. In the first section of the MATLAB task, participants had to rate 90 faces three times and this is quite a time-consuming and monotonous task. It is possible that by the last rating of the faces participants were not fully paying attention to the faces that they were rating and could have given them all similar scores rather than properly rating them. This could result in them receiving a suboptimal outcome because they rated them all poorly. This could be improved by making the task more rewarding and thus they would want to pay more attention to what they are rating as they would want to perform well on the task. This could be done by offering participants a reward at the end if they achieve high scores in the ranking task, or by providing more breaks between the face rating tasks so that it is less tedious for participants.

Although this research did provide an insight into how well people search for dates compared to the optimum, it is possible that it would be difficult to generalise to dating in the real world. One way in which it would be difficult to apply to real life is that the secretary problem ignores the prospect that the person that you desire might reject you. So, although it tells you the best solution for picking a date, this may actually not be functional in real life as it is not always reciprocal. Also, it is difficult to apply to dating as to implement the model’s optimal strategy you need to know N (the number of possible candidates that could be encountered). This is also something that actual mate seekers are not going to know as there could be an endless number of people to encounter and there is no way of knowing the amount of options that are coming up (Beckage, Todd, Penke and Asendorpf, 2009). This is unlike experimental research, as in this study participants were aware that there were only 12 potential options per sequence and this would not be the case in real dating. There are possibly other strategies that would be more applicable to real life dating that do not require the use of algorithms to find the ‘optimal’ mate choice and these may be more worthwhile for dating in real life.

Another flaw with the current study is that it only used Caucasian faces in the facial rating task. This could have caused an issue for some of the participants as it is not appropriate for all people and this could have altered how they rated the faces or why they did not want to go on a ‘date’ with any of them. This could be a reason why people searched through the list for longer as none of the faces were appealing to them and therefore they ended up choosing one of the last options in the sequence as they did not want to choose any of them. Research has found that people have an own-race bias in discrimination and response accuracy (Meissner and Brigham, 2001). This means that they’d probably be more likely to choose a date that is of the same race as them and this would be important to consider further. To improve on this and make the task more inclusive for all participants, the MATLAB faces should be tailored in order to make sure there are faces from each race and this could make it more appealing to everyone that participates.

Following on from this idea, it is possible that age also influences how people behave on the face sequence task. The age range in the present study was very small (all participants were between 18 and 22 years) and all of the participants were university students. This is problematic because it only represents a small segment of the population and does not acknowledge that dating is a biological necessity for people of all ages. The results of the study could be very different if participants from a wider age group were used. There could be differences in dating preferences between generations and as many older people have grown up without the use of dating apps and sites, it would be interesting to see whether they follow the same trends with searching for too long or if this bias for looking at faces is highly related to the new dating technology. If they did search for less time than the computer model compared to younger people then this could imply an important generational difference in dating. Older participants may also display a bigger variance in risk taking than younger people so this could be an interesting area to examine in the future. Many of the participants in the current study gave similar scores on the risk assessments whereas people from different age groups could provide some interesting, contrasting results. Research has shown that older adults and the elderly are less risky for gains than young adults (Lauriola and Levin, 2001). As they are shown to be less risky they may display different dating behaviours that would be noteworthy to examine. Some research has also shown that risk is a trait that changes across the adult life span. Carstensen and Turk-Charles (1994) studied 83 subjects aged between 20 and 83 years and found that compared to younger subjects, older subjects reported less sensation seeking which is linked to risk taking. This indicates that risk is not something that is stable over generations and therefore it would be a good area for future research. If this research was conducted with a wider age range and a larger difference in risk aversion then this could provide a better insight into the effects that risk may have on dating even if none were seen in the current study. Furthermore, including an older age group could also show if dating strategies change over time because you could compare the results of younger adults and older adults to see if it is something that fluctuates or if it is relatively stable.

Future research could also consider other individual differences besides risk that could have impacted how long people searched for. Dating is a social aspect of society that is affected by a number of different personality traits so they would be useful to look into. For example, testing participants on another personality trait like prosociality could have given an interesting result. This could be carried out by following a similar procedure for the optimal stopping task like the one that was used in this research, but also providing a questionnaire to test for prosociality. It is possible that by examining prosociality, those who score highly would search for longer through the faces than those who are lower in prosociality as they are more likely to give each of the faces a fair chance and wouldn’t want to miss out any. On the other hand, it could result in them stopping sooner as they would not like to have to reject people. Therefore, it would definitely be an interesting area to consider to further our understanding of the personality factors that impact dating strategies.

Another individual difference that would be noteworthy is delusions and the impact that these could have on dating. Research has found that people that experience delusions tend to stop searching too early in tasks without gaining sufficient information about it first. This idea of delusion-prone individuals jumping to conclusions mostly stems from research using the beads task. The beads task (Phillips and Edwards, 1966) involves asking participants to guess whether they are taking beads from the jar that consists of mostly red beads or the jar made up of mostly blue beads. Participants with delusions have been found to make a decision about which jar it is based of off seeing just one or two beads of a certain colour (McKay, Langdon and Coltheart, 2006). As well as being associated with jumping to conclusions, delusion-proneness was also associated with a need for closure. This likelihood to jump to a conclusion in delusion-prone individuals may mean that they would do the same in dating scenarios and stop too early in the sequential dating task. Delusions would therefore be another important area to consider to assess differences in dating strategies in relation to the optimal stopping problem. The potential for further research to be conducted in this area is a clear indication that although there have been some novel and exciting findings so far, there is still a lot more than can be considered in relation to dating strategies and individual differences.

Despite having some room for improvement, this research could have valuable practical implications in everyday life. For example, it could be beneficial for companies when searching for employees. Interviewers do not know who is going to come and interview in the future but they also cannot go back to the people that they have already rejected. Therefore, knowing the optimal time to stop is important to avoid missing a good candidate. By using the information put forward in the secretary and optimal stopping problem, people interviewing candidates could be more aware of how to choose the best possible employee. The results have shown that we search for too long so people should stop searching through as many people to avoid missing the optimal choice. This research could also be helpful in economical situations. For example, it would be advantageous for knowing when to buy clothes on sale or knowing when to buy a house. This is a highly stressful situation in which people do not know when to stop looking or if something better will come along in future. By using the rules put forward in the optimal stopping problem, and from the current research showing that people tend to search for too long, this could help people to know when to stop searching. This shows the practical importance of the current study as it has furthered the understanding of the optimal stopping problem and thus provides a useful insight into how long people should search for in numerous real-world situations.

References

1. Beckage, N., Todd, P., Penke, L., & Asendorpf, J. (2017). Testing sequential patterns in human mate choice using speed-dating. *Proceedings Of The 2009 Cognitive Science Conference.*
2. Blais, A., & Weber, E. (2006). A Domain-Specific Risk-Taking (DOSPERT) Scale for Adult Populations. *Judgement And Decision Making*, *1*(1), 33-47.
3. Carson, J. (2016). Just Stop Already | The Fussy Suitor Problem. *The Huffington Post*. Retrieved from http://www.huffingtonpost.com/jess-carson/just-stop-already-the-fus\_b\_8900566.html
4. Carstensen, L., & Turk-Charles, S. (1994). The Salience of Emotion Across the Adult Life Span. *Psychology And Aging*, *9*(2), 259-264.
5. Chow, Y., Moriguti, S., Robbins, H., & Samuels, S. (1964). Optimal Selection Based on Relative Rank (the “Secretary Problem”). *Israel Journal Of Mathematics*, *2*(2), 81-90.
6. Cotton, S., Small, J., & Pomiankowski, A. (2006). Sexual Selection and Condition-Dependent Mate Preferences. *Current Biology*, *16*(17), 755-765.
7. Ferguson, T. (1989). Who Solved the Secretary Problem?. *Statistical Science*, *4*(3), 282-289.
8. Freeman, P. (1983). The Secretary Problem and Its Extensions: A Review. *International Statistical Review, 51*(2), 189.
9. Furl, N. (2016). Manuscript in preparation.
10. Garety, P., Hemsley, D., & Wessley, S. (1991). Reasoning in Deluded Schizophrenic and Paranoid Patients. *The Journal Of Nervous And Mental Disease*, *179*(4), 194-201.
11. Holt, C., & Laury, S. (2002). Risk Aversion and Incentive Effects. *American Economic Review*, *92*(5), 1644-1655.
12. Lauriola, M., & Levin, I. (2001). Personality Traits and Risky Decision-Making in a Controlled Experimental Task: an Exploratory Study. *Personality And Individual Differences*, *31*(2), 215-226.
13. Leppänen, J. (2016). Using Eye Tracking to Understand Infants' Attentional Bias for Faces. *Child Development Perspectives*, *10*(3), 161-165.
14. McKay, R., Langdon, R., & Coltheart, M. (2006). Need for Closure, Jumping to Conclusions, and Decisiveness in Delusion-Prone Individuals. *The Journal Of Nervous And Mental Disease*, *194*(6), 422-426.
15. Meissner, C., & Brigham, J. (2001). Thirty Years of Investigating the Own-Race Bias in Memory for Faces: A Meta-analytic Review. *Psychology, Public Policy, And Law*, *7*(1), 3-35.
16. Miller, G., & Todd, P. (1998). Mate Choice Turns Cognitive. *Trends In Cognitive Sciences*, *2*(5), 190-198.
17. Phillips, L., & Edwards, W. (1966). Conservatism in a Simple Probability Inference Task. *Journal Of Experimental Psychology*, *72*(3), 346-354.
18. Pohl, P., Dunn, W., & Brown, C. (2003). The Role of Sensory Processing in the Everyday Lives of Older Adults. *OTJR: Occupation, Participation And Health*, *23*(3), 99-106.
19. Seale, D., & Rapoport, A. (1997). Sequential Decision Making with Relative Ranks: An Experimental Investigation of the "Secretary Problem". *Organizational Behaviour And Human Decision Processes*, *69*(3), 221-236.
20. Weber, E., Blais, A., & Betz, N. (2002). A Domain-Specific Risk-Attitude Scale: Measuring Risk Perceptions and Risk Behaviours. *Journal Of Behavioural Decision Making*, *15*(4), 263-290.