



Relationship between Extraversion and Delay Discounting of Social Interactions

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Introduction

Extraversion is often conceptualized as the degree to which a person engages in social activities. A person with a high degree of extraversion is thought of as being more likely to engage in social interactions and a person with a low degree of extraversion is thought of as being less likely to engage in social interactions. A self-report measure, such as the Big Five Inventory (BFI), is a commonly used personality inventory. It is used to assess extraversion. The BFI consists of a rating scale to assess levels of extraversion. An alternative approach to assessing extraversion would be through a behavioral measure.

Delay discounting, a behavioral measure, reflects how the value of a commodity decreases as time to its receipt increases. A discounting measure of social interactions would yield behavioral data as to how an individual values social interactions. For example, a person with a high degree of extraversion may choose to receive a small amount of a social interaction now rather than choosing to receive a larger amount of a social interaction after waiting a period of time. Although, past discounting research has not specifically addressed how people discount social interactions, research has been conducted on other commodities.

Delay discounting has been used with a range of commodities such as money, food, alcohol and entertainment media. Research shows that people discount these commodities at different rates and that these differences can be attributed to the commodity characteristics such as whether the outcome can produce satiation, can be immediately consumed, and serves a metabolically relevant function (e.g., Charlton, 2007).

The current research addresses three important questions:

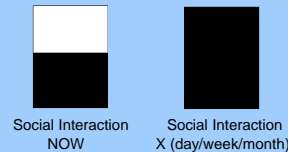
- 1) Can a subjective value be applied to delay discounting of social interactions?
- 2) Will discounting occur for social interactions as it has been observed for other commodities?
- 3) Is a behavioral measure of extraversion correlated with a personality inventory measure of extraversion?

Discounting Rate Continuum



Method

Sixty-nine participants volunteered to complete an online decision making task and online version of the Big Five Personality Inventory (BFI). Participants were asked to make decisions about two alternatives. One alternative could be received immediately and the other could be received after a given delay. Participants made decisions about social interactions which were presented as vertical bars on the computer screen. A social interaction¹ was defined broadly as a maximum ideal social interaction with a favorite person when the bar was at its maximum height. A bar at less than its maximum height was to be thought of as a less ideal social interaction with a favorite person. Each participant came into contact with the same seven delays (1 hour, 6 hours, 24 hours, 3 days, 1 week, 1 month and 6 months). Upon completing the decision making task, each participant completed an electronic version of the 44-item BFI.



Results

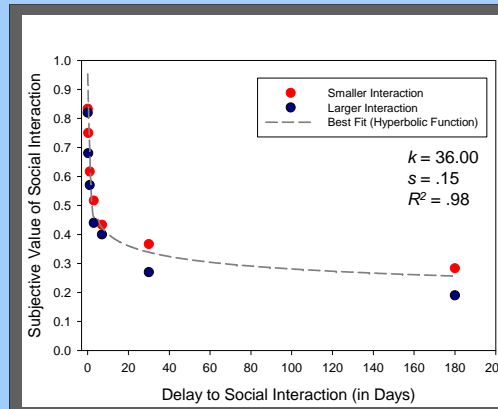


Figure 1: Median subjective values of social interaction plotted as a function of delay to receiving the social interaction.

Social interactions are discounted. As delay to receiving a social interaction from a favorite person increases, the present value of a social interaction decreases. A hyperboloid function [$V = A / (1+kX)^2$] described well the obtained data – shown as the dashed line in the figure. Choices were first made using a smaller initial interaction now (60% of a full bar, illustrated by red circles in the figure). In the second set of choices, a larger interaction was used initially (100% of a bar, illustrated as blue circles in the figure). No significant difference was detected between small and large amounts of a social interaction.

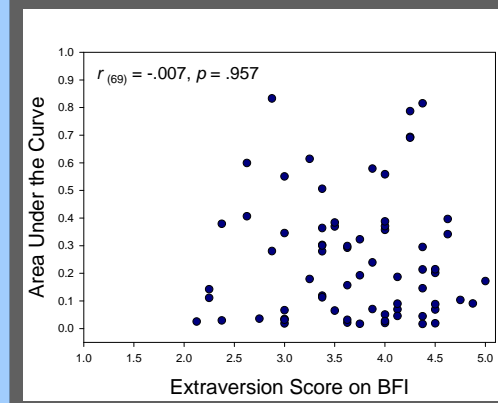


Figure 2: Mean Area Under the Curve (AUC) index of discounting plotted as a function of BFI score of extraversion.

There was no significant correlation between the behavioral measure of extraversion expressed as AUC and the BFI personality inventory measure of extraversion. AUC is an index of discounting. An AUC score closest to zero indicates steep discounting. In other words, lower AUC scores indicates preference for receiving a small amount of social interaction now as opposed to waiting for a larger interaction later. Extraversion scores could range from one to five. A score closer to five indicated a higher degree of extraversion.

Discussion

1) Can a subjective value be applied to delay discounting of social interactions?

Yes. The online decision making task we used to assess how social interactions are valued produced orderly data. This is important because while social interactions are not typically thought of in terms of an amount we were interested in quantification of this outcome. We were able to present to the participant a series of choices where the value (amount) of social interaction was expressed in terms of height of a bar— where the height of a bar represented the value of an interaction.

2) Will discounting occur for social interactions as it has been observed for other commodities?

Yes. Social interactions are discounted -- as has been observed with other commodities. That is, the longer a person has to wait to receive a social interaction from his/her favorite person, the value of the immediate interaction decreases. Although social interactions were not directly compared to food and money in this study, social interactions fall somewhere in the middle of the discounting rate continuum. Social interactions share commodity characteristics with both money and food. Social interactions are not metabolically functional but social interactions are satiable, directly, and immediately consumable.

3) Is a behavioral measure of extraversion correlated with a personality inventory measure of extraversion?

No. Having a high degree of extraversion is perceived as engaging in frequent social interactions with others. The behavioral measure of extraversion posed the question, "which would you prefer, a small amount of a social interaction now or a large amount of social interaction after a specified amount of time?". We would argue that this sort of behavioral question directly relates to what many would consider to be extraverted personality characteristics. The BFI personality rating scale poses several personal statements that are associated with extraverted personality characteristics these include: is talkative, is reserved, is full of energy, generates a lot of enthusiasm, tends to be quiet, has an assertive personality, is sometimes shy / inhibited, is outgoing / sociable. Our findings suggest that the behavioral and personality assessments are measuring different aspects of extraversion, which would be okay if it were not for the lack of correlation between the measures.