1. 1. We employ the method of agreement in study 2. We want to replicate the findings of Rueschemeyer et al., which stated that an N400 is present in participants when they understand a sentence but are aware than another participant does not understand the sentence. In order to do this we use the method of agreement. We present two sentences to the participant; the second is either plausible or implausible, while the first sentence either makes the second sentence plausible or does not. There are three different types of second sentences: “Contextual” sentences that rely on the context of the preceding sentence in order to be plausible, “Implausible” sentences that remain implausible even with the additional information of the preceding sentence, and “Plausible” sentences, which do not require the context of the preceding sentence in order to be plausible. Rueschemeyer et al. found that “Contextual” sentences elicited an N400, even though the participant understood the sentence. They repeatedly presented sentences in groups of three, as “Contextual”, “Implausible”, or “Plausible”, and found that “Contextual” sentences caused a social N400. By keep the concept of a “Contextual” sentence the same throughout the trials, Rueschemeyer et al. were able to use the method of agreement to make that conclusion, and using the same method we will hopefully come to the same conclusion. The cause of the N400 is the contextual sentence, while the effect is the social N400.
   2. As we use the method of agreement, we also use the method of difference. We could not be sure that the “Contextual” sentences were the cause of the social N400 if we did not present other types of sentences as well (“Implausible” and “Plausible” sentences). Rueschemeyer et al. hypothesized that both “Contextual” and “Implausible” sentences would produce an N400, and therefore presented the “Plausible” sentences to utilize the method of difference. The “Plausible” sentences allowed Rueschemeyer et al. to conclude that the presence of an N400 (the effect) was due to a stimuli that was either implausible to the test subject, or to the confederate (the cause).
2. Rueschemeyer et al. hypothesized that social influences (empathy) plays a role in the production of N400s. They found that “Contextual” sentences cause an N400, which is explained by their hypothesis. However, it does not necessarily prove their hypothesis correct. There are many other hypotheses that could explain this finding, which Rueschemeyer et al. do not test for, and neither do we. In order to test the accuracy of the hypothesis, there are many different paths we could take. The first is to create other possible hypotheses that explain the findings and then test them to see if they do in fact have the same results. The second is to test the conclusions that the hypothesis forcibly causes to see if they are correct—if not, the hypothesis cannot be correct. For example, if the presence of empathy causes an N400, this N400 should not be present in situations where empathy is not present. This is exactly what we are testing in our study 2. We remove the factor of empathy from half of the participants by setting them up in a competitive environment. This should not cause a social N400, because the participant does not *want* the confederate to understand the sentences.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Positive | Negative |  |
| Self-perspective | 800 | 870 | M = 835 |
| Other-perspective | 850 | 850 | M = 850 |
|  | M = 825 | M = 860 |  |

This table demonstrates the main effect of perspective, and the fact that subjects responded faster in self-perspective than other-perspective. The mean difference between the two conditions is 15, with other-perspective being higher than self-perspective. Additionally, it shows the main effect of valence, with positive valence eliciting a faster response time than negative valence with a mean difference of 35. Most importantly, this table demonstrates the interaction between perspective and valence. The mean differences of each individual effect do not explain the difference between the cells. For example, the mean difference in valence is 35, while the difference between positive and negative valence in the condition of self-perspective is 70, while the difference between positive and negative valence in the condition of other-perspective is largely not significant.

* 1. The greenhouse-Geisser corrects for violations of sphericity. In other words, when the variances of the differences between all levels of the independent variable are not equal, the greenhouse-Geisser corrects the degrees of freedom to make them more accurate.
  2. Yes, this is most certainly the case here. This is most evident when looking at the factor of valence. The main effect of valence is significant and shows a mean difference of about 35. However, the change in valence under the perspective of other is about 0. It is impossible to analyze the main effects of valence without first discussing the interaction effects of valence and perspective.

1. 1. Stimulus type was a between-subjects factor, while stimulus size was a within-subjects factor (a repeated measure).
   2. Based on Levene’s test of equality of error variances, the variances of the size factor are equal across groups. It does not violate the homogeneity of variance assumption
   3. We do not need to use Greenhouse-Geisser corrected values because sphericity was not violated. There is a main effect of size (F(1, 8)= 22.004, p = .002, ηp2= 0.773,M1 = 91.600, SEM1 = 1.308, M2 = 83.800, SEM2 = 0.725). There is also a main effect of stimulus (F(1,8) = 21.114, p = 0.002, ηp2= 0.725,Mpicture = 90.700, SEMpicture = 0.923, Mword = 84.700, SEMword = 0.923) There is no interaction between the two factors of Stimulus type and stimulus size (F(1,8) = 0.231, p > 0.05).
   4. The lines in the interaction plot run almost perfectly parallel, indicating that there is no interaction between the two factors.