Preregistration

Preregistration of Psychological Needs During Intergroup Contact — Sample: Young Medical Professionals

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Study Information

Title	Preregistration of Psychological Needs During Intergroup Contact — Sample: Young Medical Professionals
Description	In its most essential interpretation, the intergroup contact hypothesis postulates that frequent and positive contact with an out-group reduces prejudice and increases favorable attitudes towards the other group (Hewstone, 1996; Pettigrew, 1998). A key condition for these contact benefits, has been that the interaction is indeed perceived as positive — making the interaction quality a crucial mechanism of inter-group contact (e.g., MacInnis and Page-Gould, 2015). It is widely

accepted that equal status, common goals, collaboration, and structural support during the interaction form the optimal conditions for a positive contact (Allport's Optimal Contact conditions, Allport, 1954). And indeed a major meta-analytic review showed, that intergroup contact benefits were larger when Allport's conditions were met. However, the meta-analysis also showed that contact resulted in more positive intergroup relations even when Allport's conditions were not met.But they don't discuss Allport's conditions. It, thus, remains unclear why exactly Allport's conditions work and whether there might be an underlying psychological mechanism at play.

We propose that Allport's optimal contact conditions are effective in creating positive contact because they constitute common psychological needs of the interacting individuals. If this is indeed the case, the impact of fulfilling other fundamental needs should produce similar beneficial contact results. And more importantly, the satisfaction of key situation needs during the interaction should predict the positive contact effects most strongly.

Hypotheses

1. Based on the most general understanding of the contact hypothesis, an increase in frequency and quality of contact should jointly account for changes in more favorable outgroup attitudes.
    a. Participants with more intergroup interactions should have a more favorable outgroup attitudes.
    b. Outgroup attitudes should be higher after an intergroup interaction compared to a non-outgroup interaction.
    c. Participants with more intergroup interactions should have a more favorable outgroup attitudes depending on the average interaction quality.
2. Based on Allport's optimal contact conditions, intergroup interactions with equal status, common goals, collaboration, and structural support should predict more favorable outgroup attitudes due to more positive interaction quality perceptions.
    a. Based on Allport's optimal contact conditions, outgroup attitudes should be more favorable after intergroup interactions with equal status, com-

mon goals, collaboration, and structural support.

   b. Based on past research on the role of interaction quality, interaction quality should be more perceived as more favorable after intergroup interactions with equal status, common goals, collaboration, and structural support.
   c. Based on past research on the role of interaction quality, the variance explained in outgroup attitudes by Allport's optimal contact should to a large extend be assumed by interaction quality.

3. Based on our proposal, intergroup interactions with higher situational core need fulfillment should predict more favorable outgroup attitudes due to more positive interaction quality perceptions.

   a. Outgroup attitudes should be more favorable after intergroup interactions with high key need fulfillment.
   b. Interaction Quality should be perceived as more positive after intergroup interactions with higher key need fulfillment.
   c. The variance explained in outgroup attitudes by key need fulfillment should to a large extend be assumed by interaction quality.
   d. The effect of key need fulfillment on outgroup attitudes should be specific to intergroup interactions and not be due to need fulfillment in general. Thus, the effect of key need fulfillment on outgroup attitudes should stronger for intergroup interact than for ingroup interactions.
   e. The effect of key need fulfillment on outgroup attitudes should be persist even when taking other fundamental psychological needs into account. Thus, the effect of key need fulfillment on outgroup attitudes should remain strong even after controlling for autonomy, competence, and relatedness fulfillment during the interaction (cf., self-determination theory).

4. Based on our proposal, intergroup interactions with higher situational core need fulfillment should predict outgroup attitudes at least as well as Allport's conditions.

   a. The need model (H3a) should predict more variance in outgroup attitudes than the model based on Allport's conditions (H2a).
   b. The effect of key need fulfillment on outgroup attitudes should persist even when taking other Allport's conditions into account. Thus, the

effect of key need fulfillment on outgroup attitudes should remain strong even after controlling for equal status, common goals, collaboration, and structural support.

Design Plan

Study type **Observational Study**. Data is collected from study subjects that are not randomly assigned to a treatment. This includes surveys, natural experiments, and regression discontinuity designs.

Blinding No participant blinding is involved in this study.

Study design This study used an extensive longitudinal design. Using a daily diary format, for at least 30 days participants received a short survey twice per day (at around 12pm and 7pm). We additionally included a longer pre- and post measurement survey the days before and after the extensive longitudinal data collection.

Randomization No randomization is involved in this study.

Sampling Plan

Existing data **Registration prior to accessing the data**. As of the date of submission, the data exist, but have not been accessed by you or your collaborators. Commonly, this includes data that has been collected by another researcher or institution.

Explanation of existing data The data was collected as part of a larger collaboration on daily intergroup relations. The researchers have had no direct access to the data, as the data was collected using an automated system using the FormR framework (Arslan et al., 2020).

Data collection procedures

The data was collected in a three step procedure:

1. Entry Survey: A pre-measurement questionnaire (appr. 25 minutes) including demographic information, and relations to the Dutch majority. (payment: 2 Euros)
2. Experience Recaps: At least 30 days of short reflection surveys (appr. 3—5 minutes) on intergroup interactions twice a day. (payment: 1 Euro per Recap; up to 2 Euros per day)
3. Conclusion Survey: On the last day, we conclude with a post-measurement questionnaire (appr. 25 minutes) with some questions on habits and reflection of the study. (payment: 2 Euros)

After the initial 30 day duration, participants are offered the possibility to continue participating in the study either with payment if daily diary measures were missed during the initial study phase or without payment after a total of 60 daily diary measurements were completed. After the initial 30-day period, participants receive automated feedback based on their own well-being, attitudes, and motive responses as an additional initiative give participants access to their own data and to compensate study participation.

Sample size

Our target sample size is a sum of 4,000 daily diary measurements. With 100% completion rate that would be archieved with 67 participants (60 daily diary responses each). Given that we expect some incomplete daily diary measurements, we aimed to recruit 80 participants.

Sample size rationale

The targeted sample size depended on a combination of different factors. Different analyses were planned as part of the collaboration and budgeting was a practical constraint. Some analyses were planned based on (1) the pre- to post measurements, (2) the dynamic developments over the daily diary measurements, as well (3) the contemporary effects within the daily diary measurements.

Power considerations of mixed effects model such as with extensive longitudinal data are difficult to estimate because of the complex covariance structures. Simulation studies based on the first two samples within this project indicated that with well-distributed scales, and small to medium effect sizes, 70-80 participants with at

least seven daily diary measurements and a simple pre–post survey were sufficiently powerful (power = .8, alpha = .05) to answer most of the key research questions of the collaboration.

The ultimate sampling procedure decision was made as a practical balancing of the number of participants and the number of measurements provided by each participants. Given that this study primarily focuses on the contemporaneous effects within the daily diary measurements, power should thus be high enough.

Stopping rule

Participants will be recruited until 80 participants finish the pre-measurement. Invitations to complete additional daily diary measurements will be extended until participants chose to leave the study or at the most until two months (i.e., 64 days) after the initial entry survey (i.e., from the pre measurement survey).

Variables

Manipulated variables

Not applicable given that the study design is observational.

Measured variables

Key variables:

1. Whether an interaction happened during the past daytime period
    a. Did you meet a Dutch person this [morning/afternoon]?
    b. Did you meet a Non-Dutch person [morning/afternoon]?
2. Number of interactions during the past daytime period
    a. How many interactions with Dutch people did you have this [morning/afternoon]?
    b. How many interactions with Non-Dutch people did you have this [morning/afternoon]?
3. Key need assessment
    a. What was your main goal during the interaction with [name interaction partner]?
    b. During the interaction with [name interaction partner] your goal [free-text entry interaction key need] was fulfilled.

4. Allport's Conditions (equal status, common goal, collaboration, and structural support)
    a. The interaction with [name interaction partner] was on equal footing (same status)
    b. [name interaction partner] shared your goal ([free-text entry interaction key need])
    c. The interaction with [name interaction partner] was cooperative
    d. The interaction with [name interaction partner] was voluntary
5. Interaction Quality
    a. Overall, the interaction with [name interaction partner] was: Unpleasant to Pleasant
6. Outgroup Attitudes
    a. After the interaction, how favorably do you feel towards the Dutch.

Control variables:

1. Self Determination Theory needs ("During the interaction with [name interaction partner]")
    a. I was myself.
    b. I felt competent.
    c. I shared information about myself.
    d. [name interaction partner] shared information about themselves.
2. General key need during daytime
    a. What was your main goal during this [morning/afternoon]?
    b. During this [morning/afternoon] your goal ([free-text entry daytime key need]) was fulfilled
    c. How important was your goal ([free-text entry daytime key need]) to you:
3. Student Goals ("Please rate the importance of each goal during the interaction with [name interaction partner]"):
    a. Social support / social connection goals
    b. Romantic or sexual relationship goals

c. Academic goals
d. Career goals
e. Financial goals
f. Health / fitness goals
g. Leisure / fun goals
h. Personal improvement / growth goals
i. Service / helping goals
j. Spiritual / religious goals

Additional Analyses:

1. Generalization from interaction partner to outgroup
    a. After the interaction, how favorably do you feel towards [name interaction partner].
    b. The interaction with [name interaction partner] was representative of the Dutch.
2. Alternative interaction quality definition ("Overall, the interaction with [name interaction partner] was . . . ")
    a. Unpleasant to Pleasant
    b. Superficial to Meaningful
    c. Ineffective to Effective
    d. Unimportant to Important
3. Potential moderation by the relationship with interaction partner
    a. How close do you feel to [name interaction partner]?
    b. How much do you trust [name interaction partner]?
    c. What is your relationship with [name interaction partner]?
4. Potential moderation by key need characteristics
    a. [name interaction partner] helped fulfill your goal [free-text entry interaction key need].
    b. How important was your goal ([free-text interaction key need]) to you?
5. Potential moderation by the interaction characteristics
    a. How long was the interaction? (in minutes)

b. What was the main language during the interaction?
c. The interaction was: With a single other / In a group

Full variable information is available in the codebook ('Codebook_AOT-M_ItemsPerSection.xlsx')

Indices

1. Mean Allport's conditions
    a. The interaction with [name interaction partner] was on equal footing (same status)
    b. [name interaction partner] shared your goal ([free-text entry interaction key need])
    c. The interaction with [name interaction partner] was cooperative
    d. The interaction with [name interaction partner] was voluntary
2. Mean belongingness during intergroup contact
    a. I shared information about myself.
    b. [name interaction partner] shared information about themselves.
3. Mean alternative interaction quality definition ("Overall, the interaction with [name interaction partner] was . . . ")
    a. Unpleasant to Pleasant
    b. Superficial to Meaningful
    c. Ineffective to Effective
    d. Unimportant to Important

Analysis Plan

Statistical models

1. Contact Hypothesis
    a. Correlation: $r_{InteractionFrequency,OutgroupAttitudes} \neq 0$
    b. T-test: $\mu_{OutgroupInteraction} > \mu_{IngroupInteraction}$

c. Regression: $Attitude \sim AverageContactFreq \times AverageContactQual$

2. Allport's Conditions

   a. Regression: $Attitude_{ij} \sim \gamma_{00} + \gamma_{10} AllportConditions_{ij} + u_{oj} + r_{ij}$

   b. Regression: $Attitude_{ij} \sim \gamma_{00} + \gamma_{10} AllportConditions_{ij} + \gamma_{20} InteractionQuality_{ij} + u_{oj} + r_{ij}$
   with $u_{oj} \sim \mathcal{N}(0, \tau_{00}^2)$ and $r_{ij} \sim \mathcal{N}(0, \sigma^2)$

3. Key Need Fulfillment

   a. Regression: $Attitude_{ij} \sim \gamma_{00} + \gamma_{10} KeyNeedFulfill_{ij} + u_{oj} + r_{ij}$

   b. Regression: $InteractionQuality_{ij} \sim \gamma_{00} + \gamma_{10} KeyNeedFulfill_{ij} + u_{oj} + r_{ij}$

   c. Regression: $Attitude_{ij} \sim \gamma_{00} + \gamma_{10} KeyNeedFulfill_{ij} + \gamma_{20} InteractionQuality_{ij} + u_{oj} + r_{ij}$

   d. Regression: $Attitude_{ij} \sim KeyNeedFulfill_{ij} \times OutgroupInteraction_{ij}$

   e. Regression: $Attitude_{ij} \sim \gamma_{00} + \gamma_{10} KeyNeedFulfill_{ij} + \gamma_{20} Autonomy_{ij} + \gamma_{30} Competence_{ij} + \gamma_{40} Relatedness_{ij} + u_{oj} + r_{ij}$
   with $u_{oj} \sim \mathcal{N}(0, \tau_{00}^2)$ and $r_{ij} \sim \mathcal{N}(0, \sigma^2)$

4. Comparison with Allport's Conditions

   a. Model Comparison: $AIC_{KeyNeedModel} > AIC_{AllportModel}$

   b. Regression: $Attitude_{ij} \sim \gamma_{00} + \gamma_{10} KeyNeedFulfill_{ij} + \gamma_{20} AllportConditions_{ij} + u_{oj} + r_{ij}$
   with $u_{oj} \sim \mathcal{N}(0, \tau_{00}^2)$ and $r_{ij} \sim \mathcal{N}(0, \sigma^2)$

Transformations Enter your response here.

Inference criteria Enter your response here.

Data exclusion Enter your response here.

Missing data	Enter your response here.
Exploratory analyses (optional)	Enter your response here.

Other

Other (Optional)	Not applicable.

References

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