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DETERMINANTS, RECIPROCITY, AND EGOCENTRIC BIAS

By

Casey Silva

An Honors Project Submitted in Partial Fulfillment of the Requirement for Honors

In

The Department of Psychology

Faculty of Arts and Sciences

Rhode Island College

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Abstract

This study focuses on cognitive representations of one's own and others' dyadic relationships and tests the principle that there is a self-serving bias in the assessment of them. Not only do people believe they are superior to other individuals on many psychological dimensions, called egocentric bias, they also believe that their dyadic relationships with others are superior. Participants, called key persons, were brought into the laboratory, and instructed to select three family members and three friends that they know well, and who also know one another within groups but not across groups. After doing so, participants made ratings of their own and others' dyadic relationships. This study concluded that key persons believe that listening quality is increased when they are present within the dyad, both as a speaker and as a listener. From this, we indicate possible future directions of study, as well as potential explanations for such a phenomenon.

Keywords: Listening, Dyads, Egocentric Bias, Idiographic Key Person Design, Social Relations Model

Cognitive Representations of Dyadic Relationships:

Determinants, Reciprocity, and Egocentric Bias

In a time where listening is, quite arguably, at an all-time low (Nichols & Stevens 2014), studying listening should, inversely, be at an all-time high. A substantial body of research has addressed listening assessment and listening quality (e.g., Bodie, Jones, Vickery, Hatcher & Cannava, 2014; Gibbons, Bore, Munro & Powis, 2007; Gearhart Denham & Bodie, 2014; Hess, Lynn, Conforti & Holmboe, 2011; Kuhn, Bradbury, Nussbeck & Bodenmann, 2018; Taylor & Weir, 2012; Watson & Barker, 1988), and the importance of listening quality in dyads has been demonstrated time and again, especially within the psychotherapeutic field (Rogers, 1951).

Although there has been extensive focus on listening and its consequences, there are basic theoretical and empirical questions that have not been addressed. One concerns the assessment of one's own and others' listening quality in close dyadic relationships in families and among friends. To our knowledge, an assessment of the quality of dyadic listening among those known well in these groups has not been addressed theoretically or empirically. Listening quality is a phenomenological experience of the speaker, and is thus not necessarily a set of behaviors emanating from the speaker; a perceiver simply knows good listening when they see it (Malloy, Kulger, Martin, & Pery, 2020). In addition, although listening to a speaker is an inherently dyadic phenomenon, research on this phenomenon has not typically employed modern sophisticated methods for the analysis of dyadic data. Since the use of dyadic modelling in the discipline of listening quality is still quite new (Kluger, Malloy, Pery, Itzchakov, Castro, Lipetz, Sela, Turjeman-Levi, Lehmann, New, & Borut, in press; Kluger & Malloy, 2020), the current research serves as a spearhead into the field. The purpose of the current research is to study participants' assessments of listening quality and interpersonal attraction (i.e., the level of liking

between two individuals') in dyads within family and friend groups, and confirm that there is a bias when making these assessments that has interpersonal consequences for said interpersonal attraction.

Theories of Interpersonal Processes in Dyads

Theories of interpersonal processes in dyads (Fiske, 2014; Leary, 1957; Schutz, 1966; Sullivan, 1939, 1949; Swann, 1984; Tagiuri, 1958) propose a bi-directional process, in which each member is focusing on their own behavior and the behavior of their partner in the dyad. The purpose of this monitoring is to coordinate action and purpose. Sullivan (1939) asserted that members within a dyad must first understand themselves, before they can truly understand their partner; only by being empathetically intertwined with one another can they draw useful inferences about the thoughts, behaviors, and actions of their partner. Leary (1957) expanded these ideas when he stated, "The interpersonal theory… requires that for each variable or variable system by which we measure the subject's behavior… we must include an equivalent set for measuring the behavior of each specified 'other' with whom the subject interacts" (p. 39). In saying this, Leary posits that the study of behavior should be primarily focused on the reciprocal exchange of interpersonal responses, as opposed to the behavior of the single individual. Moreover, measurement of the interpersonal responses of each member of the dyad is a prime focus. This dyadic exchange is precisely what Schutz (1966) believed that the theory of interpersonal behavior should address, thus adding to the credibility of Leary's research and theoretical approach. Swann (1984) developed these ideas even further, and theorized that partners "negotiate" their identities with one another in order to determine "How will this target behave with *me?*" (p. 472). Overall, these theories of dyadic/interpersonal behavior propose that interaction between individuals creates a constant, simultaneous evaluation of one's self, one's

partner, and the partner's response to one's self in order to achieve core social motives (Fiske, 2014). These exchanges are coordinated and accomplished through the exchange of language, and to this we turn.

Outcomes of Listening Quality

When individuals perceive that they are being listened to well in relationships--whether acquainted or unacquainted--they are more likely to have more intimate relationships (i.e., sharing more personal details, talking for longer periods of time, etc.) with their partner (Malloy, et al., 2020). When individuals perceive that the other is paying attention to them, they report feeling more comfortable psychologically (Castro et. al., 2016). Consequently, individuals can disclose more about themselves than they would otherwise (Marcus & Swett 2002), which fulfills the need of developing one's understanding of oneself (Pasupathi, 2001). In doing so, the individual feels rewarded for talking to their partner, prompting them to be more attracted (i.e., more likely to enjoy spending time with/exhibit more friendly behaviors) to them (Lopez-Rosenfeld et al., 2015), such as assisting them with low-cost tasks as they would help their own siblings (Stewart-Williams, 2007). This research indicates a positive effect of listening quality on dyadic relationships and members' outcomes. If self-perceived listening in dyads is biased, the positive consequences of high quality listening may not be realized, and interpersonal responses to others may be affected adversely. Therefore, should such a bias be present in dyads, it would be egocentric; the individual would believe that they are the person eliciting the most positive interactions. Not only this, said individuals would also believe that they are the focus of their interaction, while the other is simply participating in it idly. These possibilities motivate the present research, which combines the previously discussed areas of study. This combination is where we must turn in order to grasp the fundamentals of the present research.

Effects of Listening on Interpersonal Perception

Interpersonal perception is a core area of Social Psychology, wherein the main focus is analyzing the beliefs that two individuals have about themselves and their partner when interacting (Jones, 1990; Kenny, 2020; Malloy & Albright, 1990). There have been numerous studies discussing the importance of listening on interpersonal perception (Ames, Maissen & Brockner, 2012; Carter, Moles, White & Chen, 2015; Feldstein & Crown, 1990; Gearhart Denham & Bodie, 2014; Hodge, 2018), wherein it has been determined that listening is one of the key factors that determine how one views oneself and others. Together, these studies found that, due to the inherent dyadic relationship formed by social interactions, listening allows people to find what qualities and behaviors we most value, as well what our social partners may provide for us. This is a particularly important aspect of continued research. By implementing the componential analysis of dyadic listening and interpersonal perception, which the current research has done, the aforementioned egocentric bias in interpersonal listening can be assessed, as well as implications for interpersonal perception.

Listening Quality and Interpersonal Relationships

In order to determine if there is an egocentric bias when assessing listening quality in dyadic relationships, there must first be proof that a link between listening quality and interpersonal relationships exists. In the psychotherapeutic field, patients seek therapists in order to find methods to cope with and/or deal with the situations that they face (Howes, 2008). Prior to the discovery of the link between listening quality and interpersonal relationships, therapists would focus primarily on the patient, and not the therapist-patient relationship. This changed when Carl Rogers (1951) developed his theory of psychotherapy. Rogers' theory emphasized the therapist-client dyad with an emphasis on building a relationship between both the speaker

and the listener, rather than only the one-sided relationship previously described (Beebe, Beebe & Redmond, 2000). Therefore, even though therapists would listen to the issues of their patients and attempt to help them in any way that they could, the interpersonal behavior of the therapists was not a central feature of the therapeutic encounter. Therapist(s) did not have reciprocal dialogues with their patients. Consequently, patients did not feel as if they were being attentively listened to and/or having their issues "heard," causing the lack of patient-therapist communication. The relationship was therapist to patient, and not a reciprocal patient-therapist relationship. The assistance provided to the patients was suboptimal with this unidirectional model of psychotherapy.

As the field of psychotherapy developed, this suboptimal output of assistance caused a large scale hindrance to making breakthroughs. While most experts in the psychotherapeutic field were unable to bridge this growing barrier between patient and therapist, Carl Rogers was able to do so by introducing the person-centered therapy method. Within this method, Rogers was able to identify what he believed to be the barrier between patient and therapist, as well as the potential gateway needed to surmount it. According to Rogers (1952), disruptions in communication can be mitigated by having both parties understand the viewpoint of one another, gaining a larger sense of empathy. With less evaluation, more empathy, and a reciprocal interaction between the two, Rogers hypothesized that his discipline would be able to break down the barriers separating specialists like him from patients. Rogers published a number of articles in the following decades in order to support his claims statistically (Rogers, 1958, 1959, 1962, 1969, 1970). Rogers' basic ideas were picked up by Roger Graham, who sought to expand upon them. In a 2010 study, Graham was successfully able to establish a link between listening quality and interpersonal relationships. By using effective listening strategies for patients seeking

therapy, Graham was able to find that there was a correlation between interpersonal attraction and listening (Graham, 2010). The research performed by Graham showed that, when compared to therapists who were not using the detailed listening strategies, patients felt more comfortable disclosing information, as well as feeling as if they were in a psychologically better state than when they first began seeking therapy. In doing so, Graham was able to add further support to Rogers' claims about the role of quality listening in the therapeutic alliance, thus helping to advance the field of psychotherapy.

Egocentric Bias in the Assessment of Dyadic Relationships

William Cook studied egocentric bias within interpersonal family relationships. In his study, Cook (2015) examined familial dyads, in order to study mothers' assessments of the quality of interpersonal relationships in this core group of life. In this research, Cook found that mothers reported that they had more positive relationships with other family members than those members had with one another (Cook, 2015). This research introduced a new theoretical analysis of egocentric bias in the assessment of family relationships. Cook's research was also important methodologically because he used the Social Relations Model (Malloy, 2018) to study mothers' egocentric bias when assessing the quality of family relationships. With Cook's prior research, as well as supporting studies discussing an indeterminate type of bias (i.e., individuals are likely to not view every relationship as equally good or poor) within close relationships (Bradbury & Fincham, 1990; Gagné & Lydon, 2004; Sedikides et. al., 1998), the present research seeks to serve as a spearhead into this area of study, as well as extend Cook's logic by focusing on egocentric bias in both family and friend dyadic relationships with the implementation of the Social Relations Model (Malloy, 2018) to empirically assess it.

The Social Relations Model

Whilst Psychology, as a discipline, is primarily focused on the individual, many interactions include two or more people. In fact, Tagiuri (1958) proposed that the interactions between two individuals could be the single most important of human social situations. Despite Tagiuri's claim, research on dyadic phenomena was stagnant for decades. However, since the development of new research designs and statistical methods for dyadic research, there has been a proliferation of work on dyadic phenomena (Kenny, Kashy, Cook, 2006; Malloy, 2018; Malloy & Kenny, 1986). The present research is in this tradition.

The Social Relations Model (SRM) measures three (3) interpersonal effects on dyadic behavior, with the only caveat being that individuals must be in more than one dyad for each effect to be estimable. In each dyad, there is an actor and a partner; each member of the dyad occupies both roles simultaneously. With a multiple interaction dyadic design, such as the round robin, the actor and partner effects, which are individual differences, can be estimated. The actor effect quantifies individual difference in the response of the one to the many; for example, A may listen consistently well to B, C, and D. The partner effect quantifies if responses of the many to the one converge; that is, B, C, and D all believe that A listened well to them. The SRM also posits a relationship effect that is at the level of the dyad. Person A may respond with uniquely high quality listening to C, however, only average listening quality when interacting with B and D. In one of the early specifications of the model, Malloy and Kenny (1986) assert that researchers can establish if variance in behavior (such as smiling) is determined by traits, situations, or an interaction of the two. For example, in research on listening (Malloy, Kluger, Martin, & Perry, 2020) that used the round robin design, participants interacted with one another in all possible dyadic interactions. In the simplest of terms, the actor effect quantified if an individual consistently listened well or poorly with multiple partners, the partner effect

quantified if an individual elicits good or poor listening from others across different dyads, and

the relationship effect quantified uniquely high or low levels of listening quality in specific

dyadic arrangements. With all of these effects being controlled for and analyzed, the SRM is

able to accurately measure individual and dyadic processes simultaneously (Malloy, 2018;

Malloy & Kenny, 1986).

Idiographic Social Relations Modeling

Idiographic Social Relations Modeling (I-SRM) is a specialized application of the SRM

developed by Malloy (2018). Typically, the SRM employs a round robin design, wherein there

are multiple members of a group who all interact with one another, thus producing data for

estimation of actor, partner, and relationships variance components. The I-SRM, however, uses

the "Idiographic Key-Person Design" (IKPD). The difference between these two designs is that,

while the round robin design requires all participants in the study to interact with one another,

the IKPD calls for only one participant, the "key person." Utilizing the I-SRM in the current

research is beneficial, as it allows the researcher to analyze individual and dyadic processes

within the participant's perception of themselves and others. That is, their cognitive

representations of dyadic relationships.

In the present research, individuals called key persons nominated three family members

and three friends that they knew well, and who also knew one another well. For each individual,

an idiographic (i.e., within each person) round robin design was produced. It is idiographic

because all the data are produced by one person; an example of this design is presented in Table

1.

Although Cook (2015) demonstrated how to use the SRM to analyze idiographic family

data from the design in Table 1, Malloy (2018) showed how the SRM can be used to analyze

data produced in multiple groups, as well as estimation methods for a range of dyadic

phenomena.   Those methods will be used in the present research to test the following

hypotheses.

Hypotheses

Hypothesis 1 is that key-persons will report that their listening to others is better quality

than their listening with one another in both family and friend groups.

Hypothesis 2 is that key-persons will report that family members and friends evaluate

their listening ability better than they evaluate that of others.

Hypothesis 3 is that key-persons will report that their unique listening in specific dyads is

superior to that in others' unique dyadic arrangements of family members and friends.

Hypothesis 4 is that the covariance of generalized (i.e., actor and partner) and dyadic (i.e.,

relationships) effects in listening quality with interpersonal attraction at these levels will be

greater for key persons than this covariance for nominees in family and friend groups.

<div align="center">**Ethical Considerations**</div>

The Institutional Review Board (IRB) of Rhode Island College found this study to be

ethically sound. It was approved by the IRB and is a part of a larger research project being

directed by Dr. Thomas E. Malloy. Within this study, there was only a single researcher (myself,

Casey Silva) who conducted the work. This researcher recruited participants, gathered data, and

ran analyses of said data. Over the duration of the study, all participants were given two copies

of a consent document, one of which to take home, and one to read and sign before the study

session began. All consent forms were stored and locked in Dr. Malloy's office, and the raw

data were secured within the Social Relations Laboratory. The only identifying piece of

information present within the study is the name the participants sign on the consent form; all

other data have ID letters and/or numbers for organizational purposes. Participants were informed that participation in the study could be terminated at any time, for any reason, without penalty or consequence.

Because participants were instructed to rate individuals with whom they are close, during the debriefing the researcher assessed if said participants felt any discomfort due to the study. The researcher also indicated that some deceit had been used in the process of the study (i.e., the participants were not aware that the researcher was collecting data on biases). In doing so, the researcher encouraged any participants that felt uncomfortable to contact the Rhode Island College Counseling Center, and discuss their thoughts and emotions with a counselor. Participants were also given a debriefing document with links to information about the research. This also provided the contact information for the Rhode Island College Counseling Center. I have been involved in two previous studies employing this method of research, and there has not been any reported instances of adverse consequence of participation.

Method

Participants

All participants (average age = 21.83 years; males = 21, females = 79) were volunteers from the Rhode Island College Psychology Department's Participant Pool, or from the general population. Though sex was coded for each participant, at this initial "proof of concept" stage of this research, there were no predictions regarding sex, and this variable was allowed to vary randomly. We ran one-hundred (100) participants through the study, of which seventeen were from the general public. Participants who were from the RIC participant pool received three (3) course credits. Participants from the general population did not receive any compensation.

Procedure

Study session times were posted on the Psychology Department's Participant Pool Website, and flyers advertising the study were posted in public places. Once a study session was scheduled, there were up to twenty (20) slots for which participants could sign up. Once that cap was hit, or once the session time had concluded, participants had to select a different time slot. Participants were asked to gather in the Psychology Laboratory in Craig Lee Hall for data collection, and once all participants were present, or once five minutes had passed since the posted starting time of the session, the study session began. Students were thanked for attending the study session, and consent forms were distributed.

After obtaining the participant's consent to participate in the study, they were given a data collection packet (see Appendix), and the researcher read aloud the study's instructions as participants followed along. These data collection packets were organized in a way that there were no two that are in the same order; however, each set of questions will be set together (i.e., all family-centered questions were asked before all friend-centered questions, and vice versa). As there are two sets of questions, with each set containing four questions (see Table 2), there was a possibility for over one-thousand unique combinations (found by completing a 4! x 4! x 2 calculation of ordering possibilities) of the questions when accounting for the given conditions. This ensures that the questions were counterbalanced, and any possible order effects of groups or items were controlled. At this point, participants selected three (3) family members and three (3) friends for the study, and rated each of the targets, and how they believe the other members would rate them. This was done to the best approximation of the participants; no individual from their unique dyads was present and/or required to fill out any similar forms. There was no time limit on the task, and so participants had as much time as they needed in order to complete the task.

Afterwards, the data collection packets were collected by the researcher, and once completed, two Evaluation of Social Systems Scale (EVOS) (Aguilar-Raab, Grevenstein, & Schweitzer 2015) forms were distributed to each participant, at which point they were asked to complete one EVOS form for both their selected family and friend groups. The order of these ratings were also counterbalanced. This measure was not relevant to this specific project, and instead was part of the research program within which it is embedded, and allowed for each participant to give assessments of the quality of relationships within family and friend groups. As with the data collection packets, there was no time limit, and so participants were able to take as much time as they found necessary in order to complete this task.

After all participants had filled out their data collection packets and EVOS forms, the researcher gave each participant a debriefing form. The researcher read aloud the debriefing document, and instructed them on the steps to take should they feel any distress from the study session. When the researcher had completed reading the document to the participants, and there were no further questions as to how to proceed, the session concluded, and the credits were dispersed to the students within the Participant Pool. No participant reported an adverse outcome.

Measures

To establish a basis of listening quality and interpersonal relationships, a five-point numerical scale (see below) was employed to answer the set of questions asked within the data collection packet. This scale is similar to that used in listening research in the Social Relations Laboratory at Rhode Island College and the Kluger Laboratory at The Hebrew University of Jerusalem. The first two questions are measures of the same latent construct (listening quality),

while the others are measures of relationship quality. The questions which participants were presented with are as follows:

1. How attentively does each listener listen to each speaker as they discuss important aspects of their lives?

2. How much interest does each listener show to each speaker as they discuss important aspects of their lives?

3. How much does each rater enjoy spending time with each of the targets?

4. How much does each rater like each of the targets?

The questions were answered on the scale of 1-5, where 1 = Much Below Average, 2 = Below Average, 3 = Average, 4 = Above Average, and 5 = Much Above Average.

To establish a basis of assessments of relationship quality within family and friend groups, a four-point scale was employed to answer the questions asked within the EVOS (Evaluation of Social Systems Scale) form (Aguilar-Raab, Grevenstein, & Schweitzer 2015). The questions which participants were presented with are as follows:

1. For me, the way we talk with each other is…

2. For me, the way we stick together is…

3. For me, what we do for each other is…

4. For me, the feeling between us is…

5. For me, the way we decide what needs to be done is…

6. For me, the way we recognize what will help us in reaching our goals is…

7. For me, the way we make decisions is…

8. For me, the way we find solutions to problems is…

9. For me, how we adapt to change is…

10. I think we will give similar responses to these questions..

The questions were answered on a scale of "Very Poor," "Poor," "Good," and "Very Good." The tenth question in the series used a different scale, which reads: "Strongly Disagree," "Disagree," "Agree," and "Strongly Agree."

Design

We measured the assessment of listening quality and interpersonal attraction for the estimation of egocentric biases within familial and friend dyads. Key persons (participants) nominated targets that knew one another within groups, yet participants were informed that, across groups, members must be unacquainted. This is the non-overlapping idiographic key-person design (Malloy, 2018). The key person rated each nominee, and how he/she believes they would rate one another. This produced idiographic key person data for both family members and friends. Table 1 presents an example of such a design. The analysis of these data was accomplished using the computer program Soremo (Kenny & Xuan, 2004) and a package in the R programming language (RStudio Team, 2015) called TripleR (Schönbrodt, Back, & Schmukle, 2012). Both applications are specialized for the analysis of round robin data, although different standard errors are used for testing variance components. Either package can produce estimates used for the analysis of egocentric bias in round robin data (Malloy, 2018). Results produced by the two software applications conducted independently were identical.

Results

Overall Analysis Plan

We used the Social Relations Model (SRM) to produce the variances, covariances, and effect estimates necessary for testing hypotheses. Namely, the effects analyzed were the actor, partner, and relationship effects that were discussed earlier in the section dedicated to the SRM.

SRM effect estimates are the quantitative measure of a phenomenon's magnitude, while taking into account sampling error. The actor effect is a measure of consistency in the responses of one person to multiple others. The partner effect measures the consistency of the responses of multiple people to one person. The relationship effect measures a specific person's unique response to another specific person, after controlling their actor and partner effects. In the present research, the effect estimates were used to assess the magnitude of egocentric bias that may exist when people assess dyadic relationships. The SRM was also employed to compute the actor, partner, and relationship variance components when people assess the dyadic relationships of family members and friends, including themselves. Specifically, actor, partner, and relationship variance components were computed for ratings of interpersonal attraction and listening quality in dyads; these variances were also computed for the constructs indicated by measured variables.

After calculating the actor, partner, and relationship effect estimates, we then had to establish that each was statistically reliable. This was done by computing the variance components for the actor, partner, and relationship effect estimates. When a variance component is statistically reliable, this then justifies the use of the SRM effect estimates in second stage modeling (e.g. Anova models).

Cognitive Representations of Dyadic Relationships

Initial analyses sought to establish the reliability of SRM actor and relationship effect estimates for listening quality and interpersonal attraction. That is, initial analyses assessed if the SRM actor and relationship effects were reliable, and therefore appropriate for testing the proposed hypotheses.

Univariate SRM Partitioning of Variables

Across all variables, reliable actor effects were found, and documented that people perceive stable individual differences when assessing themselves and nominees on listening quality and interpersonal attraction. In the nominated family group, the average actor variance was 0.274, whereas the average actor variance within the friend group was 0.245 (Table 3). It was also found that specific partners (including key persons) are perceived as eliciting consistently good or poor listening from multiple partners, and higher or lower levels of interpersonal attraction. The average standardized partner variance in the family group being 0.286 and the average partner variance in the friend group being 0.268. Univariate relationship variance cannot be tested because it includes error, however, it will be analyzed at the construct level. All of the variances reported thus far are reliably different from zero, and establishes that actor and partner effect estimates are reliable.

Stable Latent Construct Variance

When a construct has multiple indicators, stable latent construct variance can be partitioned from random error. In the family and friend groups, there were two indicators of listening quality (Listening Attentively and Listening with Interest) and interpersonal attraction (Liking and Enjoying Time Spent). When assessing listening quality within the family group, stable variance accounted for about 80% of the overall variance. Similarly, stable latent variance accounted for about 73% of the variance when assessing interpersonal attraction within the family. Assessments of the dyadic relationships of nominated friends group members followed a similar pattern, with stable latent variance accounting for only 78% and 81% of each construct, respectively (see Table 4). After the error was removed, stable latent construct variance was then partitioned by the SRM.

Latent Construct Variance

Of the stable latent construct variance, actor, partner, and relationship variance components were estimated and all were reliably different from zero (see Table 5). In the case of interpersonal attraction within the family group, as well as both constructs within the friend group, the relationship variance was larger than actor or partner variance. Looking at Table 6, we find that interpersonal attraction within the friend group showed the largest standardized (i.e., proportion of total) relationship variance at 0.390, followed by interpersonal attraction within families at 0.338, and finally followed by the listening quality of the friend group with 0.273. These findings suggest that key persons perceive unique responses in specific dyadic arrangements. A noteworthy finding was that the assessment of listening quality within the family group showed that the actor determined the highest amount of variance, with 0.286. This finding suggests that key persons perceive individual differences among members of the family in terms of listening quality.

Generalized and Dyadic Reciprocity

There are two forms of reciprocity that can be estimated with the SRM: Generalized and dyadic. Generalized reciprocity refers to the correlation of actor and partner effects (i.e., if A is seen by others to be a good listener (partner effect), A sees them as good listeners (actor effect)), whereas dyadic reciprocity refers to the correlation of relationship effects (i.e., if B sees C as a uniquely good listener, C sees B as a uniquely good listener; Kenny, 1994). For generalized reciprocity, we found an average reciprocity correlation of $r = .86$ across both groups and constructs. Within constructs, we found that reciprocity was at an average of $r = .795$ and $r = .753$ within the family group, for Listening Quality and Interpersonal Attraction, respectively. For the nominated friend group, the average correlations were at $r = .780$ and $r = .878$. At the dyadic level, we found that an average dyadic reciprocity correlation of $r = .88$ (see Table 7).

Again, referring to Table 8, we find that the average dyadic correlations were found to be $r = $.524 and $r = .736$ for the family group, and $r = .675$ and $r = .719$ for the friend group. The largest generalized and dyadic reciprocity correlations were found among friends. This finding will be discussed further when analyzing additional findings.

SRM Component Correlations

We also correlated the partner effects for constructs. These partner-partner correlations quantify if a person is perceived as high or low on one construct, are they perceived as high or low on another construct. As shown in Table 9, we found that those who are consensually judged as good listeners are those people to whom others are attracted ($r = .86$, $p < .05$). Similarly, we assessed the correlation of interpersonal relationship effects, and found that, if one is judged as a uniquely good listener with a specific partner, that partner is perceived as being uniquely attracted to said specific listener ($r = .77$, $p < .05$). This was found to be true in both nominated groups.

These cognitive representations of dyadic relationships exist solely within the mind of the perceiver. All groups and dyads were produced by the key person; their assessments of relationships and their perceptions of the interactions of others exist entirely in their minds. Hypotheses 1 through 3 predict that these perceptions may be biased. Specifically key persons' interpretations can be flawed by egocentric bias, wherein individuals are inclined to perceive that their relationships with others are better than others' relationships with one another.

Egocentric Bias in the Assessment of Social Relationships

Within this section, evidence for egocentric bias in the assessment of dyadic relationships is presented. In previous sections, the SRM variance components and covariances provided estimates of how people cognitively assess their own, and others', dyadic relationships in

families and friend groups. For the analysis of egocentric bias, SRM actor, partner, and

relationship effect estimates (not SRM variance components) are the dependent measures of

interest. Malloy (2018) called these analyses second stage modeling of SRM components. For

this second stage, we used a mixed model design with one between factor (Key Person sex) and

four nested, repeated factors (see Table 10). Family and friend groups are repeated factors, with

role (key person (KP) or nominee (N1 - N3) nested within groups. The Listening Quality (LQ)

and Interpersonal Attraction (IA) constructs were nested within roles. Finally, indicators were

nested within constructs (L1 and L2, I1 and I2). Modeling nested effects in ANOVA is often

ignored and breeds inferential bias (Judd, Westfall, & Kenny, 2012)l this is why we explicitly

modeled nested factors. Mixed model ANOVA allowed for a direct test of Hypotheses 1 through

3.

Sex Effects

Although no predictions regarding sex were made, it was anticipated that the assessment

of dyadic relationships would operate similarly for women and men. Participant sex did not have

any effect on SRM actor effects, partner effects, or relationships effects in the ANOVA models.

Egocentric bias in the assessment of dyadic relationships occurs similarly among males and

females, and sex is no longer considered.

Individual Level of Analysis

Role Main Effect. There was a main effect of role on SRM actor effect estimates, with

$F(3,297) = 36.98$, $p < .001$, with $\acute{\eta}^2 = .27$. Key persons perceive their listening quality as

consistently better than that of their nominated family and friends, and supported Hypothesis

One. Likewise, key persons also judge themselves as consistently displaying more attraction to

others than their nominated family and friend groups display to one another. This same pattern

was evident when analyzing partner effects (comparing key persons and nominees), with

$F(3,297) = 32.20$, $p < .001$, with $\acute{\eta}^2 = .25$, and supported Hypothesis Two. Key persons also

believe that they elicit better listening quality from nominees compared to the other nominees

from the same group. Moreover, they also believe that nominees are more attracted to them (i.e.,

the key person) than they are to other nominees. Although Hypotheses One and Two were

supported, there was also evidence for moderation.

Construct Moderation. The main effect of role (key person versus nominees) found for

actor effects was moderated by the construct (listening quality and interpersonal attraction), on

which the assessments were made, with $F(3,297) = 5.53$, $p < .001$, with $\acute{\eta}^2 = .05$. These analyses

showed that key persons displayed greater egocentric bias when assessing their listening quality

than when assessing their interpersonal attraction. When considering only key persons (i.e.,

nominees excluded), it was also found that a key person's egocentric bias is stronger for listening

quality than for interpersonal attraction, with $F(1,99) = 6.04$, $p < .02$, with $\acute{\eta}2 = .06$.

Group Moderation. The role main effect was also moderated by the group being

evaluated; the family members or the friend group. While egocentric bias was observed in the

assessments of both groups, there was more bias exhibited among friends than among family

members, with $F(1,99) = 17.93$, $p < .001$, with $\acute{\eta}^2 = .15$. This pattern is also evident for key

persons' partner effects, with $F(1,99) = 15.00$, $p < .001$, with $\acute{\eta}^2 = .13$.

The test of Hypotheses One and Two required a main effect of role at the individual level

of analysis, and this was established. However, the evidence for moderation of egocentric bias

by construct and group shows that the phenomenon operates more or less strongly in different

groups, as well as on different constructs.

Dyadic Level of Analysis

In contrast to initial expectations (Hypothesis 3), key persons did not report that their listening quality and/or interpersonal attraction was uniquely better or worse than that of nominees from the family members and friend groups ($F(1,99) = 1.96$, $p = .17$, $\acute{\eta}^2 = .02$). That is, egocentric bias was not observed at the dyadic level. This resulted because (see Table 16) there was an extremely high level of perceived reciprocity among key persons, both at the individual (generalized) and dyadic levels. Moreover, we found that people see consistency in their dyadic behavior (actor), as well as consistency in the (better) responses they elicit from others, resulting in substantial actor and partner variance and covariance. While there is relationship variance, it is coupled with almost perfect reciprocity at the dyadic level. This combination of near perfect individual level consistency and near perfect reciprocity precludes key persons' relationship effect estimates from exceeding that of nominees.

Covariances of Actor, Partner, and Relationship Effects on Listening and Attraction Constructs

To test Hypothesis 4, we analyzed the covariance of actor, partner, and relationship effects in listening quality and interpersonal attraction (see Table 15). Support for Hypothesis 4 was limited to the individual level. When assessing dyadic relationships in family and friend groups, key persons perceive good listening and interpersonal attraction as related. For key persons actor effects in both constructs correlate at $r = .695$ for the nominated family group, and $r = .823$ for the nominated friend groups. They also perceive a systematic relationship on the two constructs for nominees with correlations of $r = .787$ for the family and $r = .731$ and for the friends. This means that key persons believe that those who listen well to others are also attracted to them. Key person also believe that those who listen well are those to whom others

are attracted; this is true for key persons' responses to family members (r = .690) and friends (r = .799) and for nominees responses to one another (family r = .746 and friends r = .749).

In contrast, uniquely good or poor listening in specific dyads was unrelated to uniquely high or low levels of attraction in dyads. Correlations of relationship effects in both constructs for key persons and nominees ranged from r = -.114 to r = .072 and none were reliably different from zero. So although there was substantial dyadic reciprocity (see Table 15), relationship effects for the listening and attraction constructs were not systematically related.

Discussion

This research assumes that individuals are more likely to indicate that their relationships with others are better than others' relationships with each other (Cook, 2015). As mentioned previously, Cook examined familial dyads, to study mothers' assessments of the quality of interpersonal relationships in this core group of life. In this research, Cook found that mothers reported that they had more positive relationships with other family members than those members had with one another. From these results, Cook posited that key persons (in the case of his study, mothers) exhibited a bias which favored themselves (i.e., mothers perceived relationships with other family members are better than their relationships with one another). A similar bias was found in both the nominated family and friend groups, generalizing Cook's findings to a broader social setting, as well as in other interpersonal constructs.

This research focused on two broad questions: How do people cognitively represent their own, and others', dyadic relationships, and are these assessments biased or unbiased? Results provided clear and unambiguous answers to these questions as estimated by actor variance, partner variance, relationship variance, SRM component covariances, and through SRM effect estimates.

Bias in the Evaluation of Dyadic Relationships

Hypothesis one stated that key-persons will report that their listening to others is better quality than others' (i.e., nominees) listening with one another in both family and friend groups. This hypothesis was supported by the results showing the main effect of role, however, there was also moderation of this main effect by construct and social group. This result posits that key persons believe that they exhibit greater listening ability than those they speak to.

Hypothesis two stated that key-persons will report that family members and friends evaluate their listening ability better than they evaluate that of others. This hypothesis was supported, as analyses of partner effects across groups show a significantly greater estimate among key persons than nominees. These results indicate an egocentric bias, in that key persons believe that their quality of listening is greater than those of others'. Connecting these findings with that of hypothesis one, it appears individuals focus solely on their own listening ability, as opposed to those of others in their own unique dyads. In doing so, key persons form the perception that their listening quality is better than the listening quality of nominees'.

Hypothesis three stated that key-persons will report that their unique listening in specific dyads is superior to that in others' unique dyadic arrangements of family members and friends. This hypothesis was not supported, and we believe it is due to the near perfect reciprocity shown in the analyses, as well as societal norms, in which individuals are meant to respect and care for their family members a great deal (Brannan, Biswas-Diener, Mohr, Mortazavi, & Stein, 2013; McManus, Kleiman-Weiner, & Young, 2020; Spokes, & Spelke, 2018). Such a norm may preclude making harshly negative evaluations of family members' dyadic relationships. This norm does not extend to one's chosen friend group(s), thus allowing for a greater degree of

criticism and bias. These findings indicate that key persons do not see their relationships with others to be uniquely different from the unique relationships others' have with one another.

The fourth and final hypothesis stated that the covariance of generalized (i.e., actor and partner) and dyadic (i.e., relationships) effects in listening quality with interpersonal attraction at these levels will be greater for key persons than this covariance for nominees in family and friend groups. This hypothesis was not supported, as the data gathered from this study pointed towards evidence of consistency of actor and partner effects. While supported for actor effects (see Table 5), key persons' substantial actor and partner effects relative to nominees, which when coupled with the near perfect reciprocity of ratings in dyadic relationships, precluded egocentric bias at the dyadic level.

Limitations and Future Directions

One limitation of this study was the use of mostly undergraduate students with an average age of 21.83 years, which does not necessarily generalize to the overall population; moreover, the sample was WEIRD (Western, educated, industrialized, rich, and democratic) (Henrich, Heine, & Norenzayan, 2010). Another limitation to the study is that the personal rating(s) of each nominee were not measured, thus not allowing for the estimation of the accuracy of cognitive representations of dyadic relationships, as well as possible biases. Though very difficult, gathering such ratings from those within the selected groups could allow for an assessment of accuracy, as well as bias in the representation of social relationships. Research that includes nominees' ratings is currently underway in a project in Israel at the Hebrew University of Jerusalem that, prior to the global health pandemic due to the Coronavirus, was set to begin on March 15th. It was delayed until March 23rd and is a longitudinal study being conducted online.

Future studies could focus on different aspects of relationships to assess the level of biases within. For example, trust, level of merging (i.e., differentiation, enmeshment, etc.), and other aspects of interpersonal relationships could make for interesting topics. It could also be helpful to examine what causes interpersonal attraction and/or listening quality to be high or low. In a possible future study, dyads could be brought in (either family members or friends), wherein they are instructed to interact with one another. Their interactions would be centered around the topic of interest, which in this case, could be listening. Their interactions would last between 3-5 minutes, and in each setting, both individuals would discuss how they exhibit their listening ability for one another. Both individuals would play the part of actor and partner. Once the actor has finished their portion of the interaction, the partner would then rate their level of listening with the actor, as well as their level of interest towards the partner. At the same time, the speaker would make a rating as to how much they believe the listener is interested in them. This would repeat until both members of the dyad had made ratings on one another in both roles. Malloy, Kluger, Martin, and Pery (2020) conducted such a study, and it could be extended in the manner proposed.

The findings of this study suggest that egocentric bias is largely present at the individual level; it is so strong that it precludes dyadic egocentric bias. The findings from this study could lead to better dyadic relationships across one's social groups, by means of better listening quality, as well as a better understanding of how people and others may perceive listening quality in a biased manner. This study was designed to analyze the amount of egocentric bias within relationships which are perpetuated throughout one's life, and the results found within lead me to believe that it has done just that.

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Table 1

The Idiographic Key Person Design

	KP	A	B	C
KP	-	x	x	x
A	x	-	x	x
B	x	x	-	x
C	x	x	x	-

Note. x are ratings of other members and those members' rating of oneself and - are data not

collected.

Table 2

Data Collection Packet Questions

1. How attentively does each listener listen to each speaker as they discuss important aspects of their lives?
2. How much interest does each listener show to each speaker as they discuss important aspects of their lives?
3. How much does each rater enjoy spending time with each of the targets?
4. How much does each rater like each of the targets?

Questions asked to assess listening quality and interpersonal relationship quality.

Table 3

SRM Variance Partitioning Univariate

Group	Variable	Actor	Partner	Relationship[^]
Family	Listen Attentively	0.300*	0.283*	0.416
Family	Listen with Interest	0.314*	0.306*	0.380
Family	Liking	0.221*	0.268*	0.511
Family	Enjoy Interacting	0.260*	0.286*	0.454
Friend	Listen Attentively	0.266*	0.296*	0.439
Friend	Listen with Interest	0.287*	0.276*	0.437
Friend	Liking	0.229*	0.251*	0.521
Friend	Enjoy Interacting	0.197*	0.249*	0.554

^ Because univariate relationship variance components contain error, they are not tested for reliability.

Table 4

Stable Latent Construct Variance

Group	Construct	Stable Latent Variance	Error Variance
Family	Listening Quality	0.795	0.205
Family	Interpersonal Attraction	0.736	0.264
Friend	Listening Quality	0.775	0.225
Friend	Interpersonal Attraction	0.812	0.188

Table 5

Covariance of Actor, Partner and Relationship Effects in Listening Quality and Interpersonal

Attraction: Key Persons versus Nominees

Key Persons

Actor Effects	Partner Effects	Relationship Effects
Family: $r = .695$	$r = .690$	$r = -.076$
Friend: $r = .823^A$	$r = .799$	$r = -.114$

Nominees

Family $r = .787$	$r = .746$	$r = .072$
Friend: $r = .731^B$	$r = .749$	$r = -.051$

Correlations with different letters are reliably different with $Z = 1.64, p = .05$

Table 6

SRM Variance Partitioning of Latent Construct Variance

Group	Construct	Actor	Partner	Relationship
Family	Listening Quality	0.286*	0.283*	0.226*
Family	Interpersonal Attraction	0.168*	0.230*	0.338*
Friend	Listening Quality	0.242*	0.261*	0.273*
Friend	Interpersonal Attraction	0.185*	0.237*	0.390*

Note: Entries are proportions of stable construct variance. * $p < .05$ that the variance component

is reliably different from zero.

Table 7

Correlation of Latent SRM Partner Effects: Listening Quality and Interpersonal Attraction

Group	Partner-Partner Correlation
Family	$r = .86, p < .05$
Friends	$r = .89, p < .05$

People who are consensually judged as good listeners are those people to whom others are

attracted.

Table 8

Generalized (Individual) and Dyadic Reciprocity Correlations

Group	Variable	Generalized	Dyadic
Family	Listen Attentively	0.767*	0.605*
Family	Listen with Interest	0.822*	0.443*
Family	Liking	0.800*	0.730*
Family	Enjoy Interacting	0.706*	0.741*
Friend	Listen Attentively	0.788*	0.640*
Friend	Listen with Interest	0.771*	0.710*
Friend	Liking	0.874*	0.714*
Friend	Enjoy Interacting	0.879*	0.724*

*$p < .05$

Table 9

Correlation of Latent SRM Interpersonal Relationship Effects: Listening Quality and Attraction

Group	Interpersonal Relationship-Relationship Correlation
Family	$r = .77, p < .05$
Friends	$r = .84, p < .05$

If one is judged as a uniquely good listener with a specific partner, that partner is uniquely

attracted to the specific listener.

Table 10

Mixed Model ANOVA Design

Family Group

KP	N1	N2	N3
_____	_____	_____	_____
LQ IA	LQ IA	LQ IA	LQ IA
----------- -----------	---------- -----------	---------- -----------	----------- -----------
L1 L2 I1 I2	L1 L2 I1 I2	L1 L2 I1 I2	L1 L2 I1 I2

Friend Group

KP	N1	N2	N3
_____	_____	_____	_____
LQ IA	LQ IA	LQ IA	LQ IA
----------- -----------	---------- -----------	---------- -----------	----------- -----------
L1 L2 I1 I2	L1 L2 I1 I2	L1 L2 I1 I2	L1 L2 I1 I2

Note: Sex was a between subjects factor in this design.

Table 11

SRM Actor Effects: Key Persons versus Nominees

	Mean Actor Effect	95% CI
Key Person	0.380	0.294 : 0.446
Nominee 1	0.055	- 0.023 : 0.132
Nominee 2	-0.198	-0.274 : -0.121
Nominee 3	-0.237	-0.318 : -0.156
Nominee Average	-0.380	

Note: CI is Confidence Interval

Table 12

SRM Partner Effects: Key Persons versus Nominees

	Mean Actor Effect	95% CI
Key Person	0.382	0.294 : 0.470
Nominee 1	0.038	- 0.043 : 0.119
Nominee 2	-0.206	-0.228 : -0.124
Nominee 3	-0.214	-0.302 : -0.126
Nominee Average	-0.382	

Note: CI is Confidence Interval

Table 13

SRM Actor Effects: Role by Construct Interaction

	Listening Quality	95% CI	Interpersonal Attraction	95% CI
Key Person	0.418[A]	0.324 : 0.512	0.342[B]	0.254 : 0.431
Nominee 1	0.068	-0.019 : 0.155	0.041	-0.037 : 0.119
Nominee 2	-0.251	-0.336 : -0.166	-0.144	-0.222 : -0.067
Nominee 3	-0.235	-0.321 : -0.149	-0.239	-0.324 : -0.155
Nominee Average	-0.418		-0.342	

Note: CI is Confidence Interval, and [A] and [B] denote that Key Person's egocentric bias is stronger for listening quality than for interpersonal attraction with $F(1,99) = 6.04$, $p < .02$, with $\acute{\eta}2 = .06$.

Table 14

SRM Actor Effects: Role by Group Interaction

	Family	95% CI	Friends	95% CI
Key Person	0.227[A]	0.129 : 0.326	0.533[B]	0.410 : 0.657
Nominee 1	0.141	0.027 : 0.255	-0.032	-0.123 : 0.060
Nominee 2	-0.206	-0.332 : -0.080	-0.188	-0.278 : -0.100
Nominee 3	-0.162	-0.285 : -0.039	-0.313	-0.412 : -0.213
Nominee Average	-0.418		-0.533	

Note: [A] and [B] denote that Key Person's egocentric bias is stronger among Friends than in Families ($F(1,99) = 17.93$, $p < .001$, with $\acute{\eta}2 = .15$).

Table 15

SRM Partner Effects: Role by Group Interaction

	Family	95% CI	Friends	95% CI
Key Person	0.251[A]	0.151 : 0.351	0.513[B]	0.392 : 0.634
Nominee 1	0.091	0.023 : 0.206	-0.016	-0.116 : 0.084
Nominee 2	-0.263	-0.395 : -0.132	-0.148	-0.241 : -0.056
Nominee 3	-0.079	-0.200 : -0.042	-0.349	-0.416 : -0.236
Nominee Average	-0.251		-0.513	

Note: [A] and [B] denote that Key Person's egocentric bias is stronger among Friends than in Families ($F(1,99) = 15.00$, $p < .001$, with $\acute{\eta}2 = .13$).

Table 16

Generalized and Dyadic Reciprocity: Latent Constructs

Group	Construct	Generalized	Dyadic
Family	Listening Quality	0.863*	0.831*
Family	Interpersonal Attraction	0.814*	0.897*
Friend	Listening Quality	0.868*	0.898*
Friend	Interpersonal Attraction	0.905*	0.894*

* $p < .05$

Appendix

Example Form

HOW ATTENTIVELY DOES EACH LISTENER LISTEN TO EACH SPEAKER AS THEY DISCUSS IMPORTANT ASPECTS OF THEIR LIVES?

1	2	3	4	5
not at all	below average	average	above average	very much

TARGETS OF RATING

RATERS	ME	FAMILY MEMBER 1 ____	FAMILY MEMBER 2 ____	FAMILY MEMBER 3 ____
ME	X			
FAMILY MEMBER 1 ____		X		
FAMILY MEMBER 2 ____			X	
FAMILY MEMBER 3 ____				X