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**The Hebrew University of Jerusalem**

**School of Business Administration**

**Can Listening be Taught?**

**The Effects of Listening Training on Perceived Listening**

**MBA Thesis**

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**Abstract**

High-quality listening has multiple benefits for organizations. Therefore, the present work focuses on the effects of listening training on perceived listening. However, it is still unclear whether speakers notice any change among listeners who participated in listening training. In a quasi-experiment, students registered for a listening course recruited three persons from their network. In a round-robin design, each participant rated three constructs both at the beginning and at the end of the listening course: perceived listening of each other, self-perception of listening abilities, and meta-perception of listening quality (N = 32 embedded in eight groups, a total of 192 dyadic ratings). Counterintuitively, Social Relations Modeling (Kenny et al., 2006) analysis revealed a slight or even absence of consensus on listening abilities. Besides, the results demonstrated a cascading effect for training—trainees and non-trainees scored higher in perceived listening and meta-accuracy after the course. The findings challenge the assumption that listening is a skill and suggest that the dyad is the key to promoting high-quality listening. Also, the results highlight the effects of training on trainee’s social network and offer a promising direction for scholars and practitioners. Finally, the implications for research and practice are discussed. Generally, this study demonstrated the benefits of SRM for studying training programs and their assumptions.

**Can Listening be Taught?**

**The Effects of Listening Training on Perceived Listening**

Imagine a situation where several employees discuss an issue with their manager while the latter keeps looking nervously at the clock and repeatedly checking for the arrival of “urgent” emails. Poor listening from the manager may have significant effects on financial performance (Johnston & Reed, 2014), turnover intentions (Lloyd et al., 2014) and even creativity (Castro et al., 2018). Apparently, interactions with poor listening are common. A survey among 300 employees in the US revealed that nonmanagerial employees are not satisfied with the listening they experience in their organizations (Neill & Bowen, 2021). Moreover, even when people speak and share their ideas, poor listening can diminish their ideas, as experimental evidence showed that poor listening alters speakers’ perceptions regarding past experiences (Pasupathi & Rich, 2005).

In a broader view, numerous studies have consistently shown the positive connection between high-quality listening and desired organizational outcomes, such as performance (Bergeron & Laroche, 2009; Johnston & Reed, 2014), sales (Itani et al., 2019), organizational citizenship behavior (Kluger et al., 2021; Lloyd et al., 2014; Schroeder, 2016), customer satisfaction (Aggarwal et al., 2015), trust (Aggarwal et al., 2015; Ramsey & Sohi, 1997), well-being (Schroeder, 2016), and more (for review, see; Kluger & Itzchakov, 2022; Pery et al., 2020). Therefore, managers should ask themselves how to enhance the listening quality in their organizations to gain those benefits. The intuitive solution sounds straightforward—training.

Indeed, studies suggest that training improves listening (e.g., De Lucio et al., 2000; Graybill, 1986; Itzchakov, 2020; Itzchakov et al., 2022). A meta-analysis found that the average effect size of listening training on listening behavior is =.35 (k = 22, N = 2,770; Kluger, 2020 in Itzchakov, 2020). However, listening behavior does not necessary predict the effects associated with high-quality listening. Instead, speakers’ perception (i.e., perceived listening) is claimed to be the source of the effects mentioned above (Kluger et al., 2021). Despite its importance, evidence that listening training changes speakers' perceived listening is lacking. As Kluger and Itzchakov (2022) recently stated: “The drawback of all the available data is that it is unclear whether speakers interacting with trainees notice any change” (p. 132). Therefore, it is still unknown whether an investment in listening training programs is effective for organizations.

Accordingly, this study empirically examines whether listening training can increase trainees’ listening abilities and, more specifically—whether speakers interact with trainees notice this change. Also, this study examines novel research questions regarding the effects of listening training on trainees as speakers, non-trainees, and the nature of listening in general, using Social Relations Modeling (Kenny et al., 2006; Malloy, 2018). Moreover, I propose a theoretical model aimed to explain the psychological processes induced by listening training.

In the following section, I define what high-quality listening is and consider the distinction between listening behaviors and perceived listening. Then, I discuss the nature of perceived listening and its possible implications on the effectiveness of listening training. Next, I review the research on listening training and consider the gaps in the existing literature. After that, I propose that trainees’ exposure to conscious experiences of high-quality listening is the key to psychological processes that change speakers’ perceived listening. Then, I describe the current study and how Social Relations Modeling (Kenny et al., 2006) can support its novel research questions.

## What is high-quality listening?

High-quality listening is complex and multidimensional (Worthington & Bodie, 2017). It is composed of various observable behaviors, both verbal and non-verbal (Castro et al., 2018; Vickery, 2017). For example, paying attention, nodding, gazing, paraphrasing, and using open-ended questions (Kluger et al., 2021; Yip & Fisher, 2022). Also, it is composed of unobservable behaviors: attention, comprehension, and intention (Kluger & Itzchakov, 2022). Despite the various listening definitions (Worthington & Bodie, 2017), in this work, I use the definition of listening by Castro, Kluger, Itzchakov (2016): “as a behavior that manifests the presence of attention, comprehension, and good intention toward the speaker”(p. 763)*.*

Surprisingly, despite the complex set of observable and unobservable behaviors, perception of listening was found to be holistic. Perceived listening measures yield a single factor (Jones et al., 2016; Lipetz et al., 2018) or one second-order factor (Kluger & Bouskila-Yam, 2018). That is, speakers perceive listening as holistic behavior and do not make sharp distinctions regarding the various behaviors promoting it. As Lipetz, Kluger, and Bodie (2018) stated: “laypeople do not seem to differentiate between affective, cognitive, and behavioral aspects of listening when they gauge whether their supervisor or colleague is listening to them. Rather, they seem to perceive this listening quality holistically*”* (p. 93)*.*

This suggests that listening is more about a shared feeling rather than mere objective behaviors (Kluger & Itzchakov, 2022). Thus, the observable behaviors demonstrated by the listener can be considered as various signals of attention, understanding, and intention towards the speaker (Castro et al., 2016). However, when the speaker does not receive those signals, they might feel poor listening even when the listener shows “by the book” behaviors of good listening. Indeed, Bodie and colleagues (2014) found that external observations done by trained coders are moderately correlated to speakers’ listening perceptions and, thus, might represent different perception processes. That argument gains additional empirical support from research showing that actual understanding does not predict feeling understood among newlywed couples (Pollmann & Finkenauer, 2009). As Pollmann and Finkenauer (2009) stated: “feeling that one understands one’s partner and is understood by one’s partner is unrelated to actually knowing one’s partner and being known by one’s partner” (p. 1519). Furthermore, scholars found that feeling understood has benefits. For example, it predicts greater life satisfaction and fewer physical symptoms (Lun et al., 2008).

Thus, it is claimed that the feeling of “togetherness” (Kluger & Itzchakov, 2022) and responsiveness (Itzchakov et al., 2021) characterized high-quality listening affecting various psychological constructs, such as positive affect (Lloyd et al., 2014), psychological safety (Castro et al., 2018) and social anxiety (Itzchakov et al., 2017), which in turn affect the speakers. Therefore, the source of the benefits of high-quality listening should be attributed to the perception of the speaker rather than listening behavior or listeners’ assessment (Kluger et al., 2021).

Also, to examine training effectivity, previous literature has examined self-report and objective behavior while neglecting the changes in speakers’ perceived listening (e.g., De Lucio et al., 2000; Graybill, 1986; Lawrence et al., 2016). Thus, the speaker’s perceived listening is the appropriate indicator to examine the effectiveness of training programs for listening. Examining changes in perceived listening will provide the basis for causal conclusions about the effectiveness of listening training for organizations.

## Nature of Listening

Given that perceived listening has two parts—the speaker and the listener—it is essential to question the source of high-quality listening. Namely, high-quality listening can be induced by a trait of the listener (i.e., one person consistently induces good listening perception from many speakers), the speaker (i.e., one person consistently thinks that others listen to them), and the dyad (i.e., a unique combination of listener and speaker is the source of good listening experience).

This question has direct implications for the effectiveness of listening training programs. In general, a training program as a tool for promoting desirable behavior has two main assumptions; both are closely related to the nature of the desirable behavior, in this case, high-quality listening. The first assumption posits that listening is a skill that can be developed with proper means, such as knowledge, experience, and practice. The second assumption suggests that the improvement due to training would be general and experienced by others (i.e., not related to a specific person). Therefore, shedding light on the source of perceived listening has implications for the validity of those two assumptions and consequently on the effectiveness of listening training programs.

Counterintuitively, research casts doubt on those two assumptions. First, perceived listening is mostly dyadic (Kluger et al., 2021). In other words, its variance is mostly determined by the unique listener-speaker combination (dyadic effect) and, to a lesser extent, by the listener’s listening ability (partner effect). Therefore, the assumption that training can improve listening in general, independent of the speaker’s identity, should not be accepted without further investigation. Moreover, empirical findings cast doubt on the assumption that listening is even a “skill,” as Kluger and colleagues (2021) stated, “Counterintuitively, listening quality is more a product of the unique combination of employees than an individual difference construct” (p. 1046). Across two studies, they found that the variance attributed to the listener (12%) was smaller than the variance related to the speaker (24%) and almost four-times smaller than the variance attributed to the dyad (42%) (Kluger et al., 2021). According to this evidence, to increase the listening attributed to trainees by the speakers, training programs should affect the “skill” of trainees or change its importance relative to the dyad’s importance.

## Listening Training

Although previous scholars have not examined the change in speakers’ perception yet (Kluger & Itzchakov, 2022), listening training was found as an effective tool for promoting listening behaviors among trainees (e.g., De Lucio et al., 2000; Graybill, 1986). To map the existing literature on the effectiveness of listening training programs, it is useful to use *Kirkpatrick Model* of training programs evaluation (Kirkpatrick & Kirkpatrick, 2006). Accordingly, evaluating training programs can be partitioned into four levels: reaction, learning, behavior, and results, while each level impacts the next. Reaction considers what the trainees think about the program; the learning stage considers the change in attitudes, knowledge, and skills; the third level considers the behavioral change; and the four-stage considers the organizational results of the program.

Considering the second stage—learning—two quasi-experiments found that an 18-hour listening training program increased employees’ self-perception of their listening abilities (Itzchakov, 2020). Also, one study found that parents receiving training reported improvement in knowing how to use active listening skills with their children (Graybill, 1986). At the behavioral stage, the same study revealed that parents who participated in the training sessions showed more active listening behaviors with their children than the control group (Graybill, 1986). Additionally, a randomized controlled study among nurses showed that training program improved the listening skills of nurses participated in the experimental group (De Lucio et al., 2000). Furthermore, two quasi-field experiments done in groups of colleagues found that participants who received listening training have felt more listened to by their colleagues (Itzchakov et al., 2022). In general, a recent meta-analysis found that the average effect size of listening training on listening behavior is =.35 (k = 22, N = 2,770; Kluger, 2020 in Itzchakov, 2020).

Regarding the four-stage—organizational results, a recent study revealed that listening training increase employees’ feelings of relatedness with colleagues while decreasing burnout and turnover intentions (Itzchakov et al., 2022). Also, listening training among customer-service employees increased employees’ perspective-taking and sense of competence during difficult conversations with their customers (Itzchakov, 2020). Another study showed that the *"Listening Circle"* workshop reduced social anxiety and increased attitude complexity (Itzchakov & Kluger, 2017).

## The Importance of Good Listening Experience

Given that the feeling of “togetherness” is the source underlying high-quality listening (Kluger & Itzchakov, 2022), exposure to high-quality listening experiences is expected to improve trainees’ listening (see; Kluger & Itzchakov, 2022). However, because trainees probably had already experienced good listening before, I assume that exposure to listening experiences is necessary but insufficient to make a substantial change. Instead, I suppose that being conscious of the experience of good listening is the source of becoming a better listener.

In other words, I suggest that the core for becoming a better listener lies in the ability to recognize the quality of listening and become aware of oneself listening behavior. It is more than “just” academically knowing the markers of good listening, acknowledging its effects, and knowing how to behave accordingly; it is the ability to *recognize and elicit* the proper behavior that changes the speaker’s listening experience. Because listening is mostly dyadic, trainees have to recognize and behave in a unique way for each speaker or even do “follow-up” actions that signal listening after the conversation (Kriz et al., 2021). Otherwise, in a case where they just show the same behaviors of listening—speakers would not notice the change. Correspondingly, I propose a theoretical model to explain the effects of listening training and especially conscious exposure to high-listening experiences on perceived listening.

**Figure 1**

Proposed Theoretical Model for the Effects of Listening Training on Trainees’ Listening Abilities.

Accordingly, the main hypothesis of this study is that training improves listening abilities.

H1: Perceived listening improves after training. After the course, non-trainees will perceive the trainees as better listeners.

Additionally, training increases the ability to recognize oneself listening behavior:

H2: Training improves the accuracy of the students about their listening. Meta-accuracy will increase following training both at the (a) individual level and (b) dyadic level.

Also, as part of trainees’ new experiences and knowledge, as previous literature found (e.g., Itzchakov, 2020), trainees would see themselves as better listeners after the training.

H3: Trainees will see themselves as better listeners after the training compared to the non-trainees.

Due to the hypothesis of the increased awareness to high-quality listening, I believe that trainees will reevaluate their listening experiences with their social network and, after the training, make sharper distinctions regarding the listening abilities of others. In other words, using the terminology of the *Extended Social Relations Model* (Kenny et al., 2022), the *dissimilation* (i.e., the standard deviation of judgments) of trainees as perceivers of their untrained social network will increase due to the training.

H4: Ratings of trainees after the training will have more variance relative to the ratings of their untrained network members.

Also, the hypothesis that trainees would have the skills to monitor their behavior and change their behavior according to each speaker, suggests that the variance attributed to the listening skill of trainees would be greater after training compared to before training.

H5: Training amplifies listening as a “skill” while reducing its dyadic nature.

Also, the findings showing that listening is reciprocated in dyads (Kluger et al., 2021), suggest that:

H6: Training for listening affects the trainees’ social environment at the dyadic level.

## The Current Study

To test the hypotheses, a field quasi-experiment was run to collect round-robin data before and after a listening course. In a round-robin design, each participant rates all the other members in his group on the same measures (e.g., perception and behavior). In the current study, each participant in the quasi-experimental group (i.e., a student in a listening course) recruited three people from their social network; they formed the quasi-control group. Thus, each group (i.e., the student and their network) consisted of four people. All its members rated each other on the same three measures (i.e., listening, self-perception of listening and meta-perception of listening) twice: at the beginning and the end of the course. This formed a rich design for modeling listening perception: repeated measures round-robin. These data were analyzed using *Social Relations Modeling* (SRM; Kenny et al., 2006; Malloy, 2018).

# Method

## Participants

Students who registered for an elective MBA course on listening were asked to participate in the study and to recruit three people whom they know well, have regular communication with, and who also know each other. The students were approached twice: at Week 1 of the course and the end of the course (i.e., Week 14).

At Time 1, 35 students and 79 non-students completed the survey yielding 37 round robin groups. There were 12 observations with extensive missing data and three observations with zero variance. Because SRM analysis requires full round-robin data (i.e., at least four observations for each group), 11 groups containing those observations were discarded. Moreover, six groups not containing observations from all the participants were discarded. Also, one group was discarded because a participant made an error in the personal code. This left 19 groups with complete round-robin data at Time 1.

At Time 2, 20 different groups participated, 20 students and 50 non-students completed the survey. There were two observations with extensive missing data and four observations with zero variance; as a result, five groups were discarded. Because of an error in the personal code, one group was discarded. Additionally, four groups not containing observations from all the participants were discarded. This left 10 groups at Time 2. Also, joining the data between Time 1 and Time 2 left eight groups for both times. The data and the R codes to analyze them are available at https://osf.io/2nsfv/?view\_only=914c7884113e4d9eacbc8e082ec05f5d

Combining the data by group and participant resulted in 192 dyadic ratings, 32 participants (age: *M* = 32.9, *SD* = 13.5; 68.8% female) within eight round-robins nested in two times. There was a significant difference in age, *t* (24.83) = 2.72, *p* = .012, between students (*M* = 26.5, *SD* = 1.77) and non-students (*M* = 35.0, *SD* = 15.0).

## Procedure

 In Week 1, the students were instructed to create a unique anonymous code for their group and to choose one unique letter for each member. Next, they were asked to pass the codes with a link to the survey to their network and to fill out the survey themselves. At Week 14, using the same codes, the students were asked to fill out the survey and ask the people they chose from Week 1 to do the same. Also, each participant was asked to report their relationship type with the other group’s members (i.e., a relative, a friend, a colleague, or an acquaintance) and their age and gender. During the course, the students studied academic material about listening and its effects in the workplace and experienced various exercises aiming to promote high-quality listening.

## Measures

In a round-robin design, every item is presented at least three times; therefore, it is recommended to use the minimum number of items necessary to measure each construct. Besides, to estimate all components of SRM, each construct must be measured by at least two items (Kenny et al., 2006). All items were presented on a same scale ranging from 0 = *Strongly disagree* to 10 = *Strongly agree*.

### Perceived Listening

Based onprevious findings showing that even one item is sufficient to gain a reliable measure of perceived listening (Jones et al., 2016; Lipetz et al., 2018), listening was measured using two items: “X listens to me,” and “X understands me”. At Time 1, the mean (*SD*) was 6.74 (2.39), and at Time 2 it was 7.60 (2.39). The two items were highly correlated in Time 1, *r* = .82, and Time 2, *r* = .71.

### Self-Perception of Listening

Likewise,two items were used to measure the extent the one believes he/she listens to other members (i.e., self-perception of listening): “I listen to X,” and “I understand X”. At Time 1, the mean (*SD*) was 7.03 (2.36), and at Time 2 it was 7.96 (2.36). The items were highly correlated in Time 1, *r* = .88, and Time 2, *r* = .73.

### Meta Perception of Listening

Like the listening items,meta-perception regarding listening was measured using two items: “X would rate that I listen to him/her,” and “X would rate that I understand him/her”. At Time 1, the mean (*SD*) was 6.55 (2.41), and at Time 2 it was 7.46 (2.41). These items were highly correlated in Time 1, *r* = .89, and Time 2, *r* = .90.

## Analysis

SRM (Kenny et al., 2006; Malloy, 2018) is a suitable method for analyzing round-robin data. This analysis yields various estimates that form the basis for examining the current hypotheses. To capture its core, it produces three estimates: actor/perceiver effect, partner/target effect, and relationship/dyadic effect. To explain them, imagine Adam rates Thomas on perceived listening item (e.g., “Thomas listens to me”). Adam’s rating of Thomas has three potential sources for variances. The first is Adam’s actor/perceiver effect, meaning the general tendency of Adam to think that others listen to him. Note that this effect is not explicitly connected to Thomas; it is considered Adam’s general tendency as a rater. The second is the partner/target effect of Thomas, meaning how others perceive Thomas. The third component composing Adam’s rating is the unique combination between Adam and Thomas called the relationship/dyadic effect. That effect quantifies a unique component between Adam and Thomas after controlling for Adam’s perceiver effect and Thomas’ target effect. Following the same logic, Equation 1 specifies the componential structure of person i’s perception of person j’s.

Equation 1 states that person *i*’s perception of *j* is determined by the average ratings of *i’*s group (, *i’*s perceiver effect , j’s partner effect and the dyadic effect between *i and j .* Also, the equation includes a random error of *i’*s perception of *j* With the same logic, one can represent *j’*s perception of person *i.*

### Level of Analysis

Actor and partner effects are estimated at the individual level. Therefore, each person has their own actor and partner effects. For the relationship component, the dyad is the unit of analysis. Thus, each dyad has its relationship effect. Consequently, it is possible to calculate two covariances: generalized reciprocity and dyadic reciprocity.

### Generalized Reciprocity

Generalized reciprocity estimates the correlation between actor ( and partner effect at the individual level. For instance, it estimates whether persons who believe others listen to them (i.e., actor effect of perceived listening) tend to be perceived as good listeners by others (i.e., partner effect of perceived listening).

### Dyadic Reciprocity

Dyadic reciprocity estimates the correlation between the relationship effects at the dyadic level of analysis (. For example, dyadic reciprocity estimates whether *i* and *j* mutually perceive each other as exceptionally good listeners after controlling each one’sindividual effects (i.e., actor and partner).

### Bivariate Analyses

Furthermore, SRM can be estimated with more than one construct (e.g., listening and self-perception of listening). In this case, six covariances could be estimated (see Table 1).

**Table 1**

*Examples for the Six Covariates Possible in Bivariate SRM Analysis*

|  |  |
| --- | --- |
| **Covariance** | **Example** |
| Actor-Actor Cov | Whether people who think that others listen to them (*x*), tend to believe they listen to others (*y*). |
| Partner-Partner Cov | Whether people who are perceived as good listeners (*x*), are more listened to by others (*y*). |
| Actor-Partner Cov | Whether people who think that others listen to them (*x*), are more listened to by others (*y*). |
| Partner-Actor Cov | Whether people who are perceived as good listeners (*x*), tend to believe they are good listeners (*y*). |
| Intrapersonal relationship Cov | If *i* perceives *j* as good listener (*x*), does *i* perceives *j* as a person they (*i)* tends to listen to (*y*). |
| Interpersonal relationship Cov | If *i* perceives *j* as good listener (*x*), does *j* perceives *i* as a person they (*j)* tends to listen to (*y*). |

*Note*: Denoting *x* as one construct (e.g., perceived listening) and *y* as the second (e.g., self-perception of listening).

### Software

The Rpackage *TripleR* (Schonbrodt et al., 2012) was used to perform the SRM analyses, and the R package *lmerTest* (Kuznetsova et al., 2017) was used to perform repeated-measure ANOVA.

# Results

## Social Relations Model of Perceived Listening

The results of SRM estimates of perceived listening in Time 1 showed that 33.4% of the variance of perceived listening is attributed to the rater (i.e., actor variance), 15.5% to the listener (i.e., partner variance) and 30.6% to the dyad (Table 2). In Time 2, the dyadic variance increased to 55.5%, the variance attributed to the rater decreased to 12.1%, while the variance attributed to the listener decreased to zero (Table 3). Also, the relationship covariance of perceived listening (i.e., dyadic reciprocity) was not significant in Time 1, *r =* -.12*, p =* .64, but it was in Time 2, *r =* .84*, p < .*05. It indicates that listening was reciprocated only after the training. In other words, only at Time 2, when A feels that B is a good (poor) listener, also B feels that A is a good (poor) listener.

**Table 2**

*SRM Estimates of Perceived Listening in Time 1*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SRM component | Raw estimate | SE of estimate | Std. estimate | *t* | *p* |
| Actor variance | 2.286 | 1.118 | 33.4% | 2.045 | .026 |
| Partner variance | 1.062 | 0.795 | 15.5% | 1.337 | .097 |
| Relationship variance | 2.099 | 0.547 | 30.6% | 3.838 | .001 |
| Error variance | 1.406 |  | 20.5% |  |  |
| Actor-partner covariance | 1.060 | 0.783 | 0.68 | 1.353 | .189 |
| Relationship covariance | -0.255 | 0.547 | -0.122 | -0.467 | .645 |

## *Note.* N = 32 participants in 8 round robins. When *p* < .001, I wrote .001.

**Table 3**

*SRM Estimates of Perceived Listening in Time 2*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SRM component | Raw estimate | SE of estimate | Std. estimate | *t* | *p* |
| Actor variance | 0.375 | 0.572 | 12.1% | 0.655 | .259 |
| Partner variance | -0.010 |  |  |  |  |
| Relationship variance | 1.724 | 0.543 | 55.5% | 3.176 | .002 |
| Error variance | 1.005 |  | 32.4% |  |  |
| Actor-partner covariance | -0.224 |  |  |  |  |
| Relationship covariance | 1.453 | 0.543 | 0.843 | 2.677 | .013 |

## *Note*. N = 32 participants in 8 round robins.

## Perceived Listening

At Time 1, trainees did not differ from non-trainees in perceived listening partner scores, *t* (16.14) = -1.19, *p* = .25. A repeated-measure ANOVA revealed no significant interaction, *F* (1,30) = 0.29, *p =.*59, between the role (trainee vs. non-trainee) and time (Time 1 vs. Time 2). Thus, there is no evidence that perceived listening among trainees in Time 2 is higher than in Time 1. Therefore, H1 is not supported.

Also, *paired-sample t-tests* revealed that perceived listening in Time 2 was higher than Time 1 among non-trainees, *t* (23) = -3.54, *p* < .005, but not among trainees, *t* (7) = -0.996, *p* = .35). The results showed that in Time 2 listening was significantly higher among non-trainees relative to Time 1 (Table 4), Cohen’s *d* for repeated measure = 0.53. Among trainees, the scores in Time 2 were higher than in Time 1 to a similar degree, Cohen’s *d* for repeated measure = 0.47, but not significantly so, most likely due to lower statistical power.

However, because SRM analysis (Table 3) estimated zero variance for partner scores in Time 2, comparing the partner scores at the individual level is meaningless. Thus, the only possible meaningful comparison is at the group level (i.e., the group’s mean of perceived listening). The results showed that perceived listening was higher in Time 2 relative to Time 1 (Table 5). A *paired-sample t-test* revealed that perceived listening among groups in Time 2 is higher than in Time 1 with marginal significance, *t* (7) = 2.29, *p* = .056, Cohen’s *d* for repeated measure = 0.74. Because of the low power (*df = 7*) and the prior directional hypothesis suggesting that trainees affect their environment (see H6), I use *one tail p-value (one tail p = .023).* Therefore, both trainees and their untrained network scored significantly higher on perceived listening in Time 2.

**Table 4**

*Descriptive Statistics of Perceived Listening Partner Score by Role and Time.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time | Role | *N* | *Mean* | *SD* |
| T1 | Non-Trainee | 24 | 6.56 | 1.78 |
| T1 | Trainee | 8 | 7.27 | 1.33 |
| T2 | Non-Trainee | 24 | 7.50 | 1.17 |
| T2 | Trainee | 8 | 7.90 | 0.79 |

**Table 5**

*Descriptive Statistics of Perceived Listening by Time (group means).*

|  |  |  |  |
| --- | --- | --- | --- |
| Time | *N* | *Mean* | *SD* |
| T1 | 8 | 6.74 | 1.17 |
| T2 | 8 | 7.60 | 0.72 |

## Meta-Accuracy

### Individual Level

Because of the small number of observations (i.e., eight trainees), estimating Pearson correlation at the individual level may be unreliable. Furthermore, in Time 2, the variance of the perceived listening partner score was estimated as zero, which makes the correlation meaningless. Therefore, the current sample did not estimate H2 at the individual level.

### Dyadic Level

The meta-accuracy of trainees and non-trainees in Time 2 was higher than in Time 1 (see Appendix for the estimation of meta-accuracy). At Time 1, there was no evidence for meta-accuracy abilities among either trainees, r (22) = .03, p = .89, or non-trainees, r (70) = -.20, p = .087. At Time 2, there was evidence of meta-accuracy for both trainees, r (22) = .72, p < .001, and non-trainees, r (70) = .64, p < .001. The results are consistent with training improving the meta-accuracy for both trainees and non-trainees. Because non-trainees improved their meta-accuracy, too, H2 is not supported.

## Self-Perception of Listening Abilities

At Time 1, trainees significantly differ from non-trainees in actor scores of self-perception, t (27.44) = -3.17, p < .005, and in actor scores of meta-perceptions, t (24.28) = -2.99, p < .01. At Time 1, trainees rated their listening abilities higher than non-trainees. A repeated-measure ANOVA revealed no significant interaction between role and time in self-perception actor score, *F* (1,30) = 2.86, p =.10, and meta-perception actor score, *F* (1,30) = 1.84, p =.18. Therefore, H3 is not supported. Furthermore, paired-sample t-tests revealed that in Time 2, non-trainees had higher actor scores in self-perception relative to Time 1, t (23) = -2.78, p < .05, and in meta-perception, t (23) = -2.63, p < .05, while the actor scores of trainees remained the same in both measures, correspondingly, t (7) = 0.36, p = .73, t (7) = -0.15, p = .89. Contrary to the hypothesis, in Time 2, non-trainees’ self-perception and meta-perception actor scores were significantly higher relative to Time 1, Cohen’s *d* for repeated measure = 0.58, 0.54, correspondingly. But, among trainees’ the scores remained the same, Cohen’s *d* for repeated measure = -0.14, 0.05, correspondingly.

**Table 6**

*Descriptive Statistics of Self-Perception and Meta-Perception Actor Scores by Role and Time.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | Self-Perception | | Meta-Perception | |
| Time | Role | *N* | *Mean* | *SD* | *Mean* | *SD* |
| T1 | Non-Trainee | 24 | 6.58 | 2.21 | 6.09 | 2.22 |
| T1 | Trainee | 8 | 8.38 | 0.96 | 7.91 | 1.13 |
| T2 | Non-Trainee | 24 | 7.87 | 1.48 | 7.29 | 1.72 |
| T2 | Trainee | 8 | 8.25 | 1.11 | 7.97 | 0.87 |

## Variance in Perceived Listening Judgments

At Time 1, Levene’s test revealed a significant difference in the variance of actor scores between trainees and non-trainees, F (1,30) = 9.20, p < .005. In other words, trainees made less distinctive judgments than non-trainees at Time 1. However, at Time 2, the variance of actor scores among trainees was not higher relative to Time 1, F (1,14) = 2.08, p = .17. Thus, H4 is not supported. Nevertheless, the result is marginally significant (one tail p = .09) and in the predicted direction. Also, the interaction term (role X time) is significant, F (3,60) = 4.44, p < .01, as the variance of trainees’ ratings increased while the variance of non-trainees’ ratings decreased.

**Table 7**

*Descriptive Statistics of Perceived Listening Actor Score by Role and Time.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time | Role | *N* | *Mean* | *SD* |
| T1 | Non-Trainee | 24 | 6.22 | 1.98 |
| T1 | Trainee | 8 | 8.30 | 0.60 |
| T2 | Non-Trainee | 24 | 7.43 | 1.30 |
| T2 | Trainee | 8 | 8.10 | 1.06 |

## Consensus on Perceived Listening

H5 is not supported. There is no evidence that in Time 2 the dyadic variance of perceived listening among trainees is lower than in Time 1, F (1,46) = 0.10, p = .75*.* Moreover, the suggested direction is opposite to the hypothesis but not significant. This result indicates that the consensus about trainees’ listening in Time 2 did not differ from Time 1.

**Table 8**

*SD of Dyadic Scores on Perceived Listening by Role and Time.*

|  |  |  |  |
| --- | --- | --- | --- |
| Time | Role | *N* | *SD* |
| T1 | Non-Trainee | 72 | 1.15 |
| T1 | Trainee | 24 | 0.62 |
| T2 | Non-Trainee | 72 | 0.92 |
| T2 | Trainee | 24 | 0.77 |

## Effects of training on trainees’ environment

Because the variance in perceived listening partner scores in Time 2 is practically zero (Table 3), calculating the difference between partner scores in Time 1 and partner scores in Time 2 is meaningless. Nevertheless, the correlation was insignificant, *r* (22) *=* -.12*, p =* .59. H6 is not supported.

## Stability of Dyadic Variance

Bivariate SRM analysis (see Tables A5-A7 in the Appendix) revealed that the dyadic variance is stable across time for all three measures (i.e., listening, self-perception of listening, and meta-perception). In other words, a higher dyadic score to partner A from actor B in Time 1 predicts a higher dyadic score from actor B to partner A in Time 2 (i.e., intrapersonal relationship covariance). Specifically, when a person is perceived as a good (poor) listener by a speaker in Time 1, the same listener is perceived as a good (poor) listener by the same speaker in Time 2, r = .57, p < .005 (i.e., perceived listening). Furthermore, a listener who believes that they especially listens to a specific speaker in Time 1 also feels that they especially listens to the same speaker in Time 2, r = .75, p < .05 (i.e., self-perception). Additionally, a listener who estimates that a specific speaker would rate them as a good (poor) listener in Time 1 also estimates that the same speaker would rate them as a good (poor) listener in Time 2, r = .75, p < .005 (i.e., meta-perception). Thus, bivariate SRM analysis revealed that dyadic scores in Time 1 strongly predict the dyadic scores in Time 2 for all three measures. That is, the dyadic variance is stable across time.

# Discussion

None of the hypotheses were supported. Also, the SRM analysis in Time 2 showed no consensus regarding perceived listening. Thus, the current findings cast doubt on the assumption that listening is an individual’s skill. Instead, the results highlight the dyadic nature of listening—the unique experience between a specific speaker and a listener—as the source of listening perception. As in Time 2, the variance attributed to the dyad increased from 30% to 55%, while the variance attributed to the individual decreased from 15% to zero. Furthermore, the bivariate SRM analysis revealed that the dyadic variance is stable across time for all three measures. In other words, a higher dyadic score in Time 1 predicts a higher dyadic score with the same partner in Time 2.

The absence of variance related to partner effect in Time 2 prevents the current study from providing a solid conclusion about the effectiveness of listening training on trainees’ perceived listening (H1). Nevertheless, the evidence demonstrated that the average level of perceived listening in Time 2 is significantly higher relative to Time 1. Besides, additional findings differ between Time 1 and Time 2. For instance, listening was dyadically reciprocated only in Time 2. Also, in Time 2, trainees and non-trainees showed high dyadic meta-accuracy, while in Time 1, there was no evidence for dyadic meta-accuracy.

Moreover, the results indicated differences between trainees and non-trainees. For example, in Time 2, only non-trainees increased their self-perception regarding their listening abilities, while the self-perception of trainees did not change. Another difference was the change in the variance of perceived listening judgments. While among trainees, the variance of judgments increased in Time 2, among non-trainees, the variance decreased. It means that trainees made more distinctive judgments about others’ listening in Time 2 compared to their judgments in Time 1, while non-trainees did the opposite.

In general, the results underline the dyadic nature of listening. This means that the source of listening perception is mainly related to a specific combination of a listener and speaker (i.e., the dyad) and, to a lesser extent, related to the listener’s traits. This finding is consistent with a recent SRM study that examined perceived listening in teams (Kluger et al., 2021). By analyzing round-robin ratings from two studies (*N* = 273 in 64 round-robins, a total of 910 dyadic ratings), Kluger et al. (2021) showed that the dyad explained over 40% of the variance, while the personality trait (i.e., the partner variance) explained three times less variance (12%). Also, consistent with the current findings, listening was reciprocated only in dyads (Kluger et al., 2021). However, one of the exciting findings of the current study was the increase in dyadic variance in Time 2 while the partner variance decreased. It suggests that the dyads—the connection between two persons—became more important. Perhaps the training promoted a particular psychological process through the trainees, strengthening their connection with their network.

That explanation gains support from the *Episodic Listening Theory* (Kluger & Itzchakov, 2022). That theory claims that high-quality listening perception accelerates a spiral of improvements in speakers’ psychological safety and authenticity, resulting in higher levels of listening and feeling of togetherness. Consistently, the findings in Time 2 revealed that listening was reciprocated only in dyads and that the average level of perceived listening in Time 2 was higher than in Time 1.

Therefore, the Episodic Listening Theory and its claim about spiral improvements can explain the findings regarding the cascading effects of listening training. In other words, the effects of the training on trainees’ social network (i.e., non-trainees). For example, the current study found that non-trainees’ self-perception regarding their listening abilities was significantly higher in Time 2 relative to Time 1. Moreover, non-trainees improved their dyadic meta-accuracy in Time 2, relative to Time 1. Those findings suggest that non-trainees were somehow affected by their connection to trainees. Consistent with previous research, good listeners benefit their speakers (e.g., Itzchakov & Weinstein, 2021; Pasupathi et al., 1998).

Furthermore, the changes among non-trainees emphasize the distinction between studying listening versus experiencing it. Because non-trainees did not participate in the course, the differences between Time 1 and Time 2 should probably be attributed to the trainees. Perhaps, a few trainees chose to complete their listening tasks with the same members they had chosen as their network. This could also explain the increased dyadic variance in Time 2 and the higher perceived listening scores in Time 2. However, because there is no available information about how trainees interacted with non-trainees during the training period, this explanation could only be empirically examined in a future study.

Yet, even when the frequency of interaction between trainees and non-trainees is high, the effect of listening training on non-trainees is not straightforward. For example, an experiment among parents who received parental training revealed that children of parents in the experimental condition did not notice any changes in parental affiliation, despite parents reporting they used more listening skills (Mageau et al., 2022). This discrepancy hints that what makes a listening program effective in changing speakers’ experience is probably not related to using specific skills. Consistently, previous evidence showed that listening perception is only moderately correlated to listening quality estimated by trained coders (Bodie, 2014).

Therefore, because learning listening skills and opportunities to use them does not necessarily lead speakers to experience high-quality listening, listening training scholars should also examine whether the speakers notice the change. Otherwise, they may miss a vital step to claim for training success. For instance, the evidence showing that nurses used more listening skills (De Lucio et al., 2000) does not imply that patients indeed noticed the difference; therefore, it is still unclear whether that training achieved its goal. On the contrary, previous research showed that self-report predicts perceived listening (Kluger et al., 2022; Lloyd et al., 2014). Also, the current study found that listeners can predict their listening quality (i.e., meta-accuracy at the dyadic level).

To reach this gap and make more solid conclusions about the success of listening training, I recommend future investigations to explore under which circumstances the “listening signals” are successfully passed to the speaker. Furthermore, the discrepancies between the listener’s self-report, external behaviors, and the speaker’s experience suggest a new research direction focusing on the process that goes through the listening signals passing from the listener to the speaker.

Nevertheless, the findings of the current study hint that non-trainees somehow “enjoyed” the benefits of the training. This could be the basis for a novel and promising research direction. Beyond enriching the scholarly literature, this direction could benefit HR practitioners and managers. Managers may invest their resources more effectively and impact their organization by affecting employees’ networks. From a broader perspective, understanding and utilizing the effects of training programs on an individual’s social network might be a promising direction for HR management in organizations.

Another finding that needs attention is the slight or even absent consensus on listening abilities. In other words, people did not agree about an individual’s listening. Consequently, the theoretical model proposed to explain the effects of training on listening abilities (see Figure 1 in the Introduction) should be re-examined. It assumed that trainees would know how to change their behavior according to their experience with the speakers, and they would do it consistently across speakers. They would improve their “general ability” to listen by fitting their behavior consistently. However, the failure to find a decrease in the dyadic variance among trainees in Time 2 (see H5) suggests that trainees did not consistently fit their behavior to each speaker. On the contrary, the findings strengthen the importance of the unique experience between a speaker and a listener. Therefore, a new theoretical model should be conceptualized to explain the mechanism of listening training. It should focus on the dyadic experience and how training affects it?

## Implications

The absence of consensus on one’s listening challenges a basic assumption of listening training—that listening is a skill. This finding has significant implications for listening training and its research. First, scholars should develop new measurement methods for assessing training success, considering that listening is mostly dyadic. Second, the low consensus suggests that listening training should provide a platform for dyadic experiences rather than convey information or practice behaviors signaling listening. Perhaps, the aim of listening training should be expanding the number of high-quality listening dyads the trainee takes part in. Third, consistent with previous findings (Kluger et al., 2021) and theory (Kluger & Itzchakov, 2022), the intuitive paradigm regarding the source of high-quality listening should be changed—from an individual-centered approach to a dyadic-centered approach. Therefore, instead of asking how one can become a better listener, scholars should ask how to enhance the listening experience shared by the two.

From a broader perspective, scholars investigating training programs can also use the logic behind SRM analysis to expose assumptions underlying various behaviors that training programs aim to promote, such as effective communication, leadership, negotiation management, and more. Perhaps, counterintuitively, some behaviors do not depend on the individual’s abilities but are related to dyadic connections. SRM can help scholars address such questions. By answering those questions, scholars and practitioners can design better training programs. Moreover, insights provided by SRM analysis could also be helpful for managers making evidence-based decisions about whether and how to invest their financial resources to gain a higher impact. In that context, because the current study found that listening is mostly dyadic, it recommends that HR practitioners focus on programs involving dyadic experiences.

## Limitations

One of the main limitations of this study is the small number of valid observations (i.e., eight trainees and 24 non-trainees). SRM analysis demands data from at least four members in each group, so a large amount of data was discarded. That limitation reduces the generalizability of the conclusions and the probability of detecting effects. Thus, I advise taking caution with the null results. A related limitation is the high rates of attrition and missing/low-quality data—only eight out of 37 groups in Time 1 were included in the analysis. This loss can be a significant limitation because the attrition is probably biased. Because the course was elective, perhaps students who did not find the subject (i.e., listening) engaging left the course. Also, the missing data attributed to non-trainees may be correlated with their liking, intimacy, and relationship with the trainee. Generally, those considerations are especially relevant for scholars conducting SRM studies asking focal participants to recruit their network. They might influence the properties of the available data and, therefore, the results.

Indeed, evidence for a self-selection effect was revealed in the results. For example, in Time 1, trainees scored significantly higher than non-trainees in perceived listening and self-perception of listening abilities. Those findings suggest that students with higher interpersonal skills might choose to study the course. Also, that self-selection effect may explain why trainees did not have higher self-perception scores in Time 2, while non-trainees did. Listening training may not affect those who already perceive themselves as good listeners. Likewise, this logic suggests that training’s effect may not be linear but depends on prior individual differences.

To overcome those methodological challenges, I recommend conducting future studies in social groups with clear boundaries, such as team members, and examining the entire network (i.e., all the team members). This design cancels the bias attributed to the process in which focal participants choose their network. Also, as an ambitious study, conducting a randomized controlled experiment can deal with many of the limitations mentioned above and provide researchers and practitioners with robust and causal conclusions about the effects of listening training.

Furthermore, I recommend developing advanced methods for dealing with missing data in SRM round-robin designs. In this way, more scholars could also benefit from the advantages of SRM in their research and examine novel research questions on their subjects of interest. Also, those methods could lower the gap between the statistical models developed by scholars and their use in practice. With more flexible and robust models, practitioners can also use SRM logic to make better decisions. This study is an excellent example of why SRM should also be standard in the practitioners’ toolbox.

## Conclusion

The present study examined the effects of listening training on perceived listening. A quasi-experiment showed that perceived listening was higher after the training for both trainees and non-trainees in their network. Also, after the course, trainees and non-trainees improved their ability to recognize the listening quality they signal to others (i.e., meta-perception). Moreover, non-trainees perceived themselves as better listeners after the course (i.e., self-perception of listening). In general, those findings demonstrated the cascading effects of listening training on trainee’s network. Also, opposite to the assumptions underlying training, SRM analysis showed that the consensus on an individual’s listening abilities was very low. It challenges the assumption that listening is a skill. Instead, the results underlined the dyadic nature of listening. Consequently, those results have broad implications for scholars and practitioners interested in listening training. From a broader perspective, the current study shows how the logic of SRM analysis can be beneficial for investigating training programs in general and exposing assumptions underlying various psychological phenomena.

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# Appendix A

## Results of SRM Analysis

**Table A1**

*SRM Estimates of Self-Perception of Listening in Time 1*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SRM component | Raw estimate | SE of estimate | Std. estimate | *t* | *p* |
| Actor variance | 3.224 | 1.200 | 49.2% | 2.688 | .006 |
| Partner variance | 1.115 | 0.600 | 17% | 1.858 | .038 |
| Relationship variance | 1.401 | 0.420 | 21.4% | 3.336 | .001 |
| Error variance | 0.813 |  | 12.4% |  |  |
| Actor-partner covariance | 1.177 | 0.702 | 0.621 | 1.676 | .107 |
| Relationship covariance | 0.771 | 0.420 | 0.55 | 1.836 | .079 |

Note. N = 32 participants in 8 round robins.

**Table A2**

*SRM Estimates of Self-Perception of Listening in Time 2*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SRM component | Raw estimate | SE of estimate | Std. estimate | *t* | *p* |
| Actor variance | 1.068 | 0.684 | 33.3% | 1.562 | .066 |
| Partner variance | -0.115 |  |  |  |  |
| Relationship variance | 1.104 | 0.447 | 34.5% | 2.471 | .010 |
| Error variance | 1.031 |  | 32.2% |  |  |
| Actor-partner covariance | -0.190 |  |  |  |  |
| Relationship covariance | 0.792 | 0.447 | 0.717 | 1.771 | .089 |

Note. N = 32 participants in 8 round robins.

**Table A3**

*SRM Estimates of Meta Perception of Listening in Time 1*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SRM component | Raw estimate | SE of estimate | Std. estimate | *t* | *p* |
| Actor variance | 3.276 | 1.347 | 49.4% | 2.432 | .011 |
| Partner variance | 0.583 | 0.585 | 8.8% | 0.997 | .164 |
| Relationship variance | 1.964 | 0.524 | 29.6% | 3.750 | .001 |
| Error variance | 0.802 |  | 12.1% |  |  |
| Actor-partner covariance | 0.815 | 0.737 | 0.59 | 1.107 | .279 |
| Relationship covariance | 0.682 | 0.524 | 0.347 | 1.303 | .205 |

Note. N = 32 participants in 8 round robins. When *p* < .001, I wrote .001.

**Table A4**

*SRM Estimates of Meta Perception of Listening in Time 2*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SRM component | Raw estimate | SE of estimate | Std. estimate | *t* | *p* |
| Actor variance | 1.104 | 0.845 | 30.8% | 1.307 | .102 |
| Partner variance | -0.438 |  |  |  |  |
| Relationship variance | 2.104 | 0.556 | 58.6% | 3.784 | .001 |
| Error variance | 0.380 |  | 10.6% |  |  |
| Actor-partner covariance | -0.424 |  |  |  |  |
| Relationship covariance | 1.620 | 0.556 | 0.77 | 2.913 | .008 |

Note. N = 32 participants in 8 round robins. When *p* < .001, I wrote .001.

## Results of Bivariate SRM Analysis

**Table A5**

*Bivariate SRM Between Perceived Listening in Time 1 and Perceived Listening in Time 2*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Covariance | Raw estimate | SE of estimate | Std. estimate | *t* | *p* |
| Actor-Actor | -0.092 | 0.492 | -0.100 | -0.188 | .426 |
| Partner-Partner | 0.396 |  |  |  |  |
| Actor-Partner | 0.151 |  |  |  |  |
| Partner-Actor | -0.225 | 0.325 | -0.357 | -0.694 | .247 |
| Intrapersonal Relationship | 1.078 | 0.364 | 0.567 | 2.960 | .003 |
| Interpersonal Relationship | 0.755 | 0.364 | 0.397 | 2.074 | .025 |

Note. N = 32 participants in 8 round robins.

**Table A6**

*Bivariate SRM Between Self-Perception in Time 1 and Self-Perception in Time 2*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Covariance | Raw estimate | SE of estimate | Std. estimate | *t* | *p* |
| Actor-Actor | 0.354 | 0.511 | 0.191 | 0.694 | .247 |
| Partner-Partner | 0.207 |  |  |  |  |
| Actor-Partner | 0.129 |  |  |  |  |
| Partner-Actor | -0.040 | 0.359 | -0.037 | -0.113 | .456 |
| Intrapersonal Relationship | 0.931 | 0.395 | 0.749 | 2.354 | .014 |
| Interpersonal Relationship | 1.000 | 0.395 | 0.804 | 2.529 | .009 |

Note. N = 32 participants in 8 round robins.

**Table A7**

*Bivariate SRM Between Meta-Perception in Time 1 and Meta-Perception in Time 2*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Covariance | Raw estimate | SE of estimate | Std. estimate | *t* | *p* |
| Actor-Actor | 0.622 | 0.758 | 0.327 | 0.822 | .210 |
| Partner-Partner | -0.012 |  |  |  |  |
| Actor-Partner | 0.141 |  |  |  |  |
| Partner-Actor | 0.003 | 0.486 | 0.003 | 0.005 | .498 |
| Intrapersonal Relationship | 1.521 | 0.480 | 0.748 | 3.167 | .002 |
| Interpersonal Relationship | 1.262 | 0.480 | 0.621 | 2.628 | .007 |

Note. N = 32 participants in 8 round robins.

## Estimating Meta-Accuracy

Suppose that David and Amy rate each other on perceived listening items (e.g., “Amy/David listens to me”) and on meta-perception items (e.g., “Amy/David would rate that I listen to him/her”). After controlling for individual-level effects (actor and partner effects), it is found that David thinks that Amy especially listens to him, and he believes that Amy would rate that he (David) listens to her. Assume that Amy thinks the same about David (i.e., that he listens to her and that he would rate that she listens to him). This situation is an example of high meta-accuracy.

The estimation of meta-accuracy is the correlation between perceived listening dyadic scores and meta-perception dyadic scores across the two individuals. See the following illustrative tables (Table A8 and Table A9).

**Table A8**

*Illustration of Dyadic Scores of Perceived Listening and Meta-perception.*

|  |  |  |  |
| --- | --- | --- | --- |
| Actor | Partner | Perceived Listening Dyadic Score | Meta-Perception Dyadic Score |
| David | Amy | 0.7  David’s rating of Amy’s listening. | 0.8  David’s evaluation of Amy’s rating on his (David) listening. |
| Amy | David | 0.9  Amy’s rating of David’s listening. | 1  Amy’s evaluation of David’s rating on her (Amy) listening. |

To estimate meta-accuracy, Table A8 needs to be reshaped to the following form (Table A9). The correlation represents the meta-accuracy.

**Table A9**

*Illustration of Reshaped Dyadic Scores of Perceived Listening and Meta-perception for Meta-accuracy Estimation.*

|  |  |
| --- | --- |
| Perceived Listening Dyadic Score | Meta-Perception Dyadic Score |
| 0.7  David’s rating of Amy’s listening | 1  Amy’s evaluation of David’s rating on her (Amy) listening. |
| 0.9  Amy’s rating of David’s listening | 0.8  David’s evaluation of Amy’s rating on his (David) listening. |