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Measuring Linguistic Empathy:
An Experimental Approach to Connecting
Linguistic and Social Psychological Notions of Empathy

A dissertation submitted in partial satisfaction of the
requirements for the degree of Doctor of Philosophy
in Applied Linguistics

by

Trevor Kann

2017

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ABSTRACT OF THE DISSERTATION

Measuring Linguistic Empathy:
An Experimental Approach to Connecting
Linguistic and Social Psychological Notions of Empathy

by

Trevor Kann

Doctor of Philosophy in Applied Linguistics

University of California, Los Angeles, 2017

Professor Olga Tsuneko Yokoyama, Chair

This dissertation investigated the relationship between Linguistic Empathy and Psychological Empathy by implementing a psycholinguistic experiment that measured a person's acceptability ratings of sentences with violations of Linguistic Empathy and correlating them with a measure of the person's Psychological Empathy. Linguistic Empathy demonstrates a speaker's attitude and identification with a person or event in an utterance (Kuno & Kaburaki, 1977; Kuno, 1987; Silverstein, 1976; Yokoyama, 1986). This identification is represented in the utterance through a speaker's unconscious/automatic selection from grammatically valid options that convey pragmatically different attitudes. On the other hand, Psychological Empathy is a social psychological notion that allows a person to understand and experience the emotional reality of others. The capacity for Psychological Empathy is known to differ among individuals, and assessment of this capacity is often implemented in a clinical setting to indicate those at risk of conditions

with deficits of Empathy, such as Autism Spectrum Disorder. This study measured Psychological Empathy with the Empathy Quotient test, which was designed for both clinical and non-clinical settings (Baron-Cohen & Wheelwright, 2004).

This study extended the notion of Linguistic Empathy from a linguistic phenomenon that is represented in speech to a measurable trait in an individual. The measure of Linguistic Empathy specifies the individual's capacity to notice and rate sentences that are grammatically valid but contain unnatural violations of Linguistic Empathy phenomena (e.g., *I met Nancy* versus *Nancy met me*). The results of the experiment showed that Linguistic Empathy is a measurable and systematic trait, and that it has a significant positive correlation with Psychological Empathy. This correlation suggests that despite their disparate theoretical origins, Linguistic and Psychological Empathy share a common information processing component. One important clinical application of the results is to use a test of Linguistic Empathy as an unbiased screen for individuals at risk for a deficit of Psychological Empathy.

The dissertation of Trevor Kann is approved.

Eran Zaidel

Jesse Aron Harris

Olga Tsuneko Yokoyama, Committee Chair

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2017

To Jenni,
for challenging and inspiring me *desde Simon Dice*.

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LIST OF ACRONYMS AND SPECIAL TERMS

Language/Empathy Terms:

NP	Noun Phrase
ASD	Autism Spectrum Disorder
EQ	Empathy Quotient
HES	Hogan Empathy Scale
IRI	Interpersonal Reactivity Index
QMEE	Questionnaire Measure of Emotional Empathy
Rasch Analysis	A method for measuring latent traits like attitude or ability

Statistics Terms:

ANOVA	Analysis of Variance: statistical method for testing between and among groups
SD	Standard Deviation
M	Mean
SE	Standard Error: standard deviation of the sampling distribution of a statistic
F	Mean of the within group variances
MSE	Mean Squared Error: risk function corresponding to expected value
p	Probability value of obtaining a result (statistical significance)
η_p^2	Partial Eta Squared: default measure of effect size in ANOVAs
r	Correlation Coefficient: measures how closely 2 variables are related
t-test	Assessment of whether 2 groups are statistically different
Fisher Z Test	Converts correlations into a normally distributed measure
z	Comparison of a test population with a normal population
Σ	Sigma: the sum of the values that follow

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CHAPTER 1

EMPATHY: AN INTRODUCTION

Social psychology and linguistics share a term, *Empathy*, to designate two distinct concepts: *Psychological Empathy* and *Linguistic Empathy*. Psychological Empathy is described as the ability to “understand emotionally another’s feelings and experience” (Ehrlich & Ornstein, 2010, p. 4) or as “the ability to see the world through others’ eyes so as to sense their hurt and pain and to perceive the source of their feelings in the same way as they do” (Watson, 2002, p. 446). In other words, Psychological Empathy registers a person’s emotional reactions to others and the emotional understanding involved in these experiences. Alternatively, Linguistic Empathy is a notion based on perspectives in linguistic structure that capture a speaker’s attitude toward people and things that are referenced in an utterance. As defined by Kuno (1987), Linguistic Empathy is “the speaker’s identification, which may vary in degree, with a person/thing that participates in the event” (p. 206). Linguistic Empathy is used to explain utterances that differ with respect to the speaker’s perspective, yet defy standard grammatical explanation. For instance, the utterances *I met someone last summer* and *Someone met me last summer* are logically and structurally equivalent; however, the latter seems to be markedly less acceptable than the former. Similarly, Linguistic Empathy is used to explain lexically correct options at a speaker’s disposal (e.g., a mother asking her child *Did daddy call?* rather than *Did Terrance call?*). Psychological Empathy and Linguistic Empathy both involve the understanding and application of perspective taking; however, there is no consensus of how the two types of Empathy are related. This study is designed to shed light on this question.

1.1 Empathy in Society and Language

The popular use of the term Empathy is often synonymous with compassion. When people strive to show Empathy, they are attempting to understand the world based on another's circumstances and to convey this understanding through a compassionate response. Although there may be individual and cultural nuances, the implementation of a version of Empathy exists across cultures. Empathy is universally acknowledged as a personal and social asset: It can serve as a window into morality (Baier, 1958; Hogan, 1969), it can benefit cross-cultural interaction, and it is a quality that parents endeavor to impart to their children. Barack Obama has even stressed the personal importance of learning about Empathy from his mother by using her "simple principle — 'How would that make you feel?' — as a guidepost for [his] politics." He has also argued that the United States is "suffering from an empathy deficit" (Obama, 2006, p. 66-67). Ciarrochi et al. (2016) cite the extensive prosocial benefits of Empathy, from having positive effects on relationships and communication, to promoting conflict management and emotional learning.

Although the arguments against Empathy as a prosocial behavior are few, the promotion of Empathy does convey some inherent drawbacks. First, because Empathy is highly valued socially and culturally, those who experience a deficit of Empathy on a clinical level (e.g., Autism Spectrum Disorder, psychopathy, schizoid personality disorder) can become disadvantaged and disenfranchised. Their lack of Empathy is considered antisocial and becomes stigmatized. However, for them, a lack of Empathy is not a result of complacency, selfishness, or cold calculation; it is not a choice. It is a condition that is ingrained in their neurology, which can be addressed through medical and therapeutic channels, if desired.

Bloom (2016) describes another drawback with respect to Empathy. He argues that

a paradoxical pitfall of Empathy involves a phenomenon where Empathy is more likely to be triggered when exposed to the harrowing plight of an individual as opposed to the notion of widespread human tragedy. Logically, the suffering of many should outweigh the suffering of a single person. Nevertheless, providing personal detail about an individual's struggle provides a face to the tragedy, whereas a mass of people loses out on specificity and poignancy. Bloom argues that Empathy is potentially a cultural downfall for this reason, and instead, if humans attempted to exercise compassion with more impartiality and logic, there would be less suffering. This argument suggests that when the experience of another's suffering is described as specific, real, and relatable, it becomes a more relevant target of Empathy than suffering that may be more unjust and tragic. If the suffering affects a larger population, it becomes more difficult to describe with precision an experience that affects many. When this specificity is lost, the struggle becomes less relevant and relatable.

Unfortunate circumstances can feel much more significant for a person when these details are relevant to this person's life. Yokoyama (1986) cites the example from the 1980s of Americans coping with increased gasoline prices, versus the concurrent tragedy of food shortages experienced by the Polish (p. 148). For most Americans, the issue of gasoline prices was far more relevant and palpable than the distant issue of Poland's food shortage, despite the fact that coping with devastating health issues like starvation and malnutrition exceeds the struggle of confronting more expensive gas. Relatedly, Yokoyama (1986, pp. 28 ff.) describes the linguistic notion of a *relevance requirement*, in which a message must contain information that is relevant for the hearer. Yokoyama provides the examples of a stranger who approaches someone at a train station and utters *you dropped your ticket*. This utterance is considered relevant and valid to the hearer considering the importance of a ticket in a train station. However, if the stranger approaches and utters *I'm cooking fish*

tonight, this would be irrelevant and invalid from the hearer's perspective (Yokoyama, 1986, p. 28). When the *relevance requirement* is applied on to Empathy, it suggests that when a struggle like starvation is distant (e.g., in Poland) or less specific (e.g., a mass of people), then it is considered less relevant to those who learn of these issues. Linguistic messages, like descriptions of suffering, become more relatable when the principle of relevance is observed.

The term Empathy also remains problematic for linguistics. Because Linguistic Empathy is a little known term outside of the discipline, the notion of Psychological Empathy is the default for both the layman and academics outside of linguistics. In fact, Linguistic Empathy is often avoided within the field of linguistics and overshadowed by traditional notions of syntax. Linguistic Empathy takes a functional view of language analysis in which grammar and pragmatics are interrelated, and the language participants (e.g., speaker, author, hearer, addressee) are inseparable from the speech event. This is an alternative approach to traditional syntax, which endeavors to establish and describe rules of language by investigating linguistic structure. However, grammar on its own is not the quintessence of language. Yokoyama (1986) argues that "grammar and pragmatics are inseparable; they ... verbalize both universally human ("phylogenic") experience, as well as narrowly personal ("ontogenic") experience" (p. 186). Linguistic Empathy is a linguistic phenomenon that is firmly planted in both grammar (e.g., subject/object alternation in *I met someone last summer* versus *Someone met me last summer*) and pragmatics (e.g., speaker/hearer relationship that justifies the utterance *Did daddy call?*). By extension, it considers both universal human tendencies of language, as well as situational idiosyncrasies when applied to discourse.

1.2 Goals

1.2.1 Measuring Linguistic Empathy. As mentioned, Linguistic Empathy considers both linguistic structure and individual circumstances when analyzing language behavior in order to describe a speaker's identification and point of view with respect to entities within a sentence. When this linguistic phenomenon is quantified (e.g., *more* Empathy or *less* Empathy), it refers to the extent to which a speaker shares the perspective with an entity in a sentence. For instance, the utterance *Joey was hit by Katie* expresses more Empathy with *Joey* than the utterance *Katie hit Joey* or *Katie hit her neighbor* (in which *her neighbor* and *Joey* are co-referential). Similarly, when Psychological Empathy is quantified (e.g., *more* Empathy or *less* Empathy), it can refer to a situation in which an experiential perspective is shared more or less with others. For example, two people might have different emotional responses upon learning that someone has broken an arm while riding a unicycle: One might experience *more* Empathy by feeling upset with the person and by expressing concern, while another might experience *less* Empathy and instead feel that this person deserved to have an accident for riding a unicycle.

Unlike Linguistic Empathy, Psychological Empathy is also conceived of in terms of an individual's capacity to experience more or less Empathy. Various medical conditions, such as Autism Spectrum Disorder, are related to deficits of Psychological Empathy. However, Linguistic Empathy is not currently measured as an individual trait in the same way that Psychological Empathy can be measured as a screening tool for deficits of Empathy. Although difficulty in language acquisition and processing is one of the most prominent symptoms for those who experience a Psychological Empathy deficit, Linguistic Empathy is not currently conceived of as a quantifiable notion. A primary goal of this study is to extend the theory of Linguistic Empathy from a notion that describes a speaker's

identification within a speech event to include a measure of a person's capacity for experiencing Linguistic Empathy.

1.2.2 Correlations of Linguistic Empathy and Psychological Empathy. A driving force in this study is to explore the correlations between Linguistic Empathy and Psychological Empathy. This is examined by issuing a psycholinguistic experiment designed to probe both notions of Empathy. In this experiment, a person's capacity to experience Psychological Empathy is determined through a prevalent measure of Psychological Empathy, i.e. Empathy Quotient (Baron-Cohen & Wheelwright, 2004). Then, experimental participants are exposed to sentences that vary in felicitousness, and they are asked to provide acceptability ratings for these stimuli that manipulate phenomena within Linguistic Empathy. If a measure of Linguistic Empathy is found (as posited in section 1.2.1), and if this measure correlates significantly with the measure of Psychological Empathy, then it follows that Linguistic Empathy and Psychological Empathy share more than a common term, Empathy, and are in fact interrelated phenomena. Uncovering the extent that this overlap exists is a central goal of this study.

1.2.3 Methodological impact. This dissertation takes a transdisciplinary approach to assess correlations between Psychological Empathy and Linguistic Empathy. The goals of this approach, as stated above, are to yield a measure of Linguistic Empathy as well as establish correlations between Psychological and Linguistic Empathy. The aforementioned psycholinguistic experiment produces quantifiable results that can apply to both the linguistic phenomena that are manipulated in the experiment and to the individuals who participate in the experiment. When the results are analyzed with respect to the linguistic phenomena, this serves to solidify current understandings of Linguistic Empathy, and to

nuance the understanding of the linguistic phenomena that are represented in the experiment. This methodology is relatively standard in experimental linguistics. However, when the results are analyzed by applying these results to the participants themselves, this methodology investigates individual difference factors that can account for variation in acceptability ratings. The success of the goals in sections 1.2.1 (Linguistic Empathy measure) and 1.2.2 (correlations of Linguistic and Psychological Empathy) are predicated on the analysis of the results reflecting individual differences in Empathy processing and issuing language acceptability ratings. The goal of this methodological approach is to challenge linguists to examine acceptability judgments in language not only through grammatical rules that reflect linguistic structure, but through idiosyncratic and pragmatic accounts of language that reflect individual differences in linguistic capacity.

1.2.4 Confirmations and Extensions of Empathy. In addition to the individual differences that are investigated in this dissertation, confirmation and extension to existing Linguistic Empathy theory will be discussed. The experiment provides a quantitative means to solidify linguistic phenomena within Linguistic Empathy, which can serve as evidence for a united theory of Linguistic Empathy. Additionally, if Psychological Empathy is demonstrated as a correlate of Linguistic Empathy, then the extended view of Linguistic Empathy must accommodate this united view of Empathy.

1.3 Summaries of Chapters

Chapter 2

Chapter 2 of this dissertation examines the notions of Psychological Empathy and Linguistic Empathy more deeply. One goal of this chapter is to present the disparate applications of these notions while also demonstrating an overlap in the fundamentals of

perspective taking. The chapter investigates the evolution of Psychological Empathy measures and evaluates strengths and weaknesses of the various approaches, including the Empathy Quotient test (Baron-Cohen & Wheelwright, 2004). Despite its shortcomings, Empathy Quotient is presented as an eminent measure of Psychological Empathy, and it serves as the measure of Psychological Empathy for the subsequent experiment in this dissertation. Then, the notion of Linguistic Empathy is reviewed, beginning with Empathy Hierarchies that are posited by Kuno & Kaburaki (1977) and Kuno (1987). The specifics of three of these hierarchies, the Surface Structure Empathy Hierarchy, the Person Empathy Hierarchy, and the Topic Empathy Hierarchy, are examined in depth because these hierarchies were central to creating the stimuli for the experiment in the study. Additionally, this chapter situates Kuno's approach with other notions of viewpoint in linguistics and related fields, and consolidates it with notions of Linguistic Empathy in other approaches (e.g., Silverstein, 1976; Yokoyama, 1986; Deane, 1992) for a unified Linguistic Empathy model.

Chapter 3

The purpose of chapter 3 is to bridge the theoretical notions of Empathy discussed in chapter 2 with a psycholinguistic experimental approach, and to illustrate the methodology for this approach. This chapter first provides a rationale for the experimental approach. Next, the specific features of the Linguistic Empathy Hierarchies can be isolated and operationalized as variables within an experimental setting, so the chapter demonstrates the process of linguistic manipulation of the stimuli in the experiment. The chapter then submits specific predictions based on the manipulation of the stimuli, and it concludes by providing the methodology of the experiment.

Chapter 4

The results and discussion of the experiment are presented in chapter 4. The purpose of this chapter is to present the quantitative evidence that supports the pursuit of a valid individual measure of Linguistic Empathy as well as a correlation between Psychological and Linguistic Empathy. The goals of the results are to confirm the predictions of Linguistic Empathy theory, an individual measure of Linguistic Empathy, and an Empathy processing component that is common to both Psychological and Linguistic Empathy. Additionally, the limitations and potential extensions of this experiment are considered.

Chapter 5

Chapter 5 expands upon the implications of the experiment that were introduced in the previous chapter. This chapter extends the application of these results into four areas. First, the implications of a measure of Linguistic Empathy sensitivity are introduced. Second, the correlations between Psychological Empathy and Linguistic Empathy are reviewed, and the influence that a test of Linguistic Empathy can exert on Psychological Empathy measures is discussed. Third, the methodological contributions of experimental approach challenge linguists to rethink the methods and implications of acquiring native speaker grammatical judgments. Finally, extensions are proposed for further Linguistic Empathy and Psychological Empathy experimentation.

CHAPTER 2

PSYCHOLOGICAL AND LINGUISTIC NOTIONS OF EMPATHY

This chapter describes varying notions of Psychological and Linguistic Empathies, including where they overlap and where they diverge. After establishing current psychological understandings of Empathy, the chapter discusses the means of measuring an individual's capacity for Psychological Empathy. The chapter then considers Linguistic Empathy theory, beginning with the Empathy Hierarchies proposed by Kuno and Kaburaki (1977) and Kuno (1987), and continuing with notions related to linguistic point of view, such as animacy (Silverstein, 1976) and entrenchment (Deane, 1992). Next, the chapter examines the role that passive constructions, reciprocal verbs, and preceding context can have in Linguistic Empathy. Based on these discussions, the approach to Empathy taken in this dissertation is then illustrated.

2.1 Psychological Empathy

The term Psychological Empathy in this study is used to refer to the social psychological notions of Empathy in order to distinguish Psychological Empathy from Linguistic Empathy. Psychological Empathy refers to the ability of a person to understand the thoughts and emotions of others, to share in this emotional experience, and to respond to these situations appropriately. Psychological Empathy allows a person to navigate productively the social and emotional landscape in which the interaction between the speaker and others takes place. In the field of psychology, this term is typically discussed in terms of Affective Empathy and Cognitive Empathy.

2.1.1 Affective and Cognitive Empathy. Affective Empathy reflects the emotional and prosocial component that is applied to seeing the world from another's perspective. As defined by Bryant (1982, p. 414), Affective Empathy is "the vicarious emotional response to the perceived emotional experiences of others." The emotional responses that comprise Affective Empathy are typically categorized as either parallel (i.e., experiencing the same emotion) or reactive (i.e., sympathy, pity, or compassion beyond the experiencer's emotion) (Davis, 1980; Lawrence et al., 2004). Crucially, the emotional response must be socially appropriate to be considered as part of Affective Empathy. Taking delight in another's misfortune, for instance, is self-oriented, and therefore not considered a prosocial response to another person (Baron-Cohen & Wheelwright, 2004; Lawrence et al., 2004).

Sympathy and Affective Empathy are neither equivalent nor distinct from one another; they overlap. Davis (1994) cites that the origins of sympathy and Empathy have different theoretical roots. The concept of sympathy originated from 18th century moral philosophy to describe the emotional response that occurs when a person observes someone else experiencing a significant emotion. This means that sympathy originates from focusing on another's situation, but maintaining one's own point of view. Contrarily, the concept of Empathy originates from German aesthetics to describe the phenomenon of a person inserting her/himself into another's situation. Thus, a contrast between Empathy and sympathy is that sympathy maintains a person's perspective, and Empathy involves leaving one's own point of view in order to take another's (Davis, 1994). Affective Empathy thereby demands the recognition of another's emotions and requires the ability to craft an appropriate emotionally congruent response, which sometimes includes sympathy, and sometimes includes other emotional responses.

Cognitive Empathy, on the other hand, involves parsing out the emotions and reactions of Affective Empathy from the unemotional and rational aspects of Empathy. The

focus is placed on the ability to understand others' emotions (Kohler, 1929) as well as processes like role taking and perspective switching (Mead, 1934). As defined by Hogan (1969, p. 313), Cognitive Empathy is the "intellectual or imaginative apprehension of another's condition or state of mind." This approach is not necessarily prosocial. If this person were to exploit or manipulate others with the knowledge that accompanies emotional understanding, he/she might display a lack of Affective Empathy but a wealth of Cognitive Empathy. Similarly, Smith (2006) contends that an imbalance of Cognitive and Affective Empathy is associated with Empathy deficits such as schizoid personality disorder and antisocial personality disorder, and Jolliffe & Farrington (2006, p. 592) suggest that the apparent social charm of psychopaths can be attributed to this imbalance. Jolliffe & Farrington go on to argue that, as a means of identifying this imbalance, it would be useful to have Empathy measures that accurately reflect different facets of Empathy. However, Baron-Cohen & Wheelwright (2004) maintain that despite the theoretical existence of multiple facets that Empathy embodies, they are so inherently tied that, empirically, it is exceedingly difficult to tease them apart.

2.1.2 Psychological Empathy measures. Hogan (1969) argues for the importance of developing an Empathy measurement in order to quantify concepts directly and indirectly related to morality, and thus developed a test for measuring these concepts. Developing this scale, he argues, provides a necessary step toward shifting conceptions of Empathy to a quantifiable construct. However, Jolliffe & Farrington (2006) argue that a shortcoming of the Hogan Empathy Scale (HES) is that it does not measure Empathy; rather, it identifies individuals belonging to high and low Empathy groups based on other conditions. The HES is no longer considered a valid measure of Cognitive Empathy, but it remains an accurate predictor of behavior that is indicative of criminal or delinquent behavior (Jolliffe &

Farrington, 2006, p. 591).

Other common Empathy measures include the Questionnaire Measure of Emotional Empathy (QMEE) (Mehrabian & Epstein, 1972), which measures Emotional (i.e., Affective) Empathy, and the Interpersonal Reactivity Index (IRI) (Davis, 1980), which measures both Affective and Cognitive Empathy. Both tests are self-reports in which respondents agree or disagree with statements that are designed to reflect Empathy. However, Jolliffe & Farrington (2006) argue that some statements falsely equate sympathy and Empathy (e.g., “I get very angry when I see someone being ill-treated” [Mehrabian & Epstein, 1972], “other people’s misfortunes do not usually disturb me a great deal” [Davis, 1980]). While these statements reflect instances of sympathy (or the lack thereof), Jolliffe & Farrington consider only the parallel responses of Affective Empathy (i.e., experiencing the same emotions) and not the reactive responses of Affective Empathy (feelings beyond the experiencer’s emotions) under their definition of Affective Empathy (2006, pp. 591 ff.). As such, they argue that questions relating to sympathy (i.e., reactive Affective Empathy) should be disqualified from Affective Empathy measures. Nevertheless, there appears to be a consensus that Affective Empathy includes any appropriate parallel or reactive emotional response (Davis, 1994; Baron-Cohen & Wheelwright, 2004; Lawrence et al., 2004).

Additionally, despite the attempts of the QMEE to measure solely Affective Empathy, the creators of the QMEE (Mehrabian & Epstein, 1972) cite that its items were likely to tap into a single empathic construct that includes both cognitive aspects and emotional arousal (Baron-Cohen & Wheelwright, 2004). Other critiques of the IRI state that it does not attempt to measure Cognitive Empathy; rather, they attempt to measure more general perspective taking ability. In other words, instead of measuring a person’s ability to understand the emotions of others, the IRI measures the person’s ability to take another’s perspective without necessarily understanding the emotions involved (Jolliffe &

Farrington, 2006).

Baron-Cohen and Wheelwright (2004) justify the need for a unifying test for Psychological Empathy, citing previous shortcomings of the IRI and QMEE (Baron-Cohen & Wheelwright, 2004). While previous Empathy measures may accurately express factors within Empathy (e.g., Cognitive Empathy, empathic concern, etc.), they assert that Affective and Cognitive Empathy cannot be parsed easily, and one should not be analyzed without the other. Consequently, Baron-Cohen and Wheelwright sought to develop a measure of Empathy, Empathy Quotient (EQ), to investigate the relationship between Empathy and Autism. Baron-Cohen et al. (2001) had already developed a test called the Autism Spectrum Quotient, but this quotient did not focus on Empathy. They argued that a lack of Empathy, both affectively (i.e., appropriate emotional responses) and cognitively (i.e., theory of mind), requires a unifying measure that does not attempt to parse and measure individual aspects of Empathy.

Initial tests of reliability and replicability for EQ reinforce the validity of the measure. Lawrence et al. (2004) demonstrate that the EQ test yields strong inter-rater reliability, test-retest reliability, and correlation with key aspects of the IRI. However, the study also indicates that social desirability (i.e., not wanting to self-report unfavorably) may influence participants in some questions. Additionally, despite Baron-Cohen and Wheelwright's (2004) claim that facets of Empathy (e.g., Affective versus Cognitive) cannot be parsed, Lawrence et al. (2004) employed a Principal Components Analysis to determine that the EQ questions could be accurately categorized into three subtypes of Empathy that measure: Cognitive Empathy, emotional reactivity, and social skills separately. Other evaluations of EQ (e.g., Muncer & Ling 2006, Berthoz et al. 2008) again confirm that the measure of these three separate types of Empathy is valid. Furthermore, Allison et al. (2011) support dividing the test into three categories of Empathy by applying a Rasch

analysis, to measure latent personal traits, to evidence the view of EQ as a unidimensional measure of Empathy. Crucially, through all this, the validity of the EQ remains, and considering EQ as multi-factor measure of Empathy or a unidimensional measure of Empathy are valid approaches and applications of EQ.

Additional criticisms of EQ cite that participants with Autism Spectrum Disorder (ASD) often underreport their own Empathy compared to control groups (Baron-Cohen & Wheelwright, 2004; Lawrence et al., 2004; Allison et al. 2011). With EQ questions and ASD status both relying on self-reporting, the opportunity for variance arises between those with ASD who report their condition and those who do not (Lawrence et al., 2004). Despite these criticisms, Lawrence et al. (2004) report that EQ accurately distinguishes between control groups (i.e., participants without ASD) and clinical groups (i.e., participants with ASD) because of the robust sample size. This particular shortcoming targets EQ in clinical/diagnostic settings; however, this does not convey that EQ is a false indicator of a person's Empathy. Additionally, if someone is hoping to get a baseline measure of Psychological Empathy without heeding the ASD implications, this test is described as "suitable for use as a casual measure of temperamental Empathy by and for the general population" (Baron-Cohen & Wheelwright, 2004).

To measure a socio-cognitive construct like Empathy with reliability is no simple task. Certain tests have proven successful at reliably targeting specific aspects of Empathy or Empathy related behavior (e.g., HES - offending behavior, EQ - singular Empathy construct, QMEE - emotional arousal, IRI - perspective taking). As Psychology continues to improve upon previous versions of Empathy tests, the most prominent tests all seem to follow a self-reporting style, which appears to be an inherent conflict to the impartiality of what it attempts to measure. Many of the questions on these exams are quite direct and transparent toward the goal of assessing social awkwardness or emotional confusion. This

creates a motive for someone who may want to “correctly” answer a question to avoid being labeled at risk for a deficiency of Empathy.

2.2 Linguistic Empathy

The purpose of this section is to provide an overview of Linguistic Empathy, which is the central principle under investigation in the psycholinguistic experiments in this paper. As mentioned, Linguistic Empathy and Psychological Empathy derive from different theoretical constructs, which happen to share the term *Empathy*. However, as will be demonstrated in this section, many of the theoretical foundations, like perspective-taking and appropriate responses, overlap between the two concepts. The extent to which these two distinct concepts overlap is a central research question to be explored.

2.2.1 Empathy perspective. Linguistic Empathy refers to the vantage point from which an event is encoded in a speaker’s language. Empathy is the perspective with respect to certain participants (e.g. the agent or the patient of the action in an utterance) or events in a sentence. In expressing his/her point of view, the speaker identifies with entities in a speech event to varying degrees. As defined by Kuno (1987):

- (2.1) **Empathy:** Empathy is the speaker’s identification, which may vary in degree, with a person/thing that participates in the event or state that he describes in a sentence (Kuno, 1987, p. 206).
- (2.2) **Degree of Empathy:** The degree of the speaker’s Empathy with x, $E(x)$, ranges from 0 to 1, with $E(x) = 1$ signifying his total identification with x, and $E(x) = 0$ a total lack of identification (Kuno, 1987, p. 206).

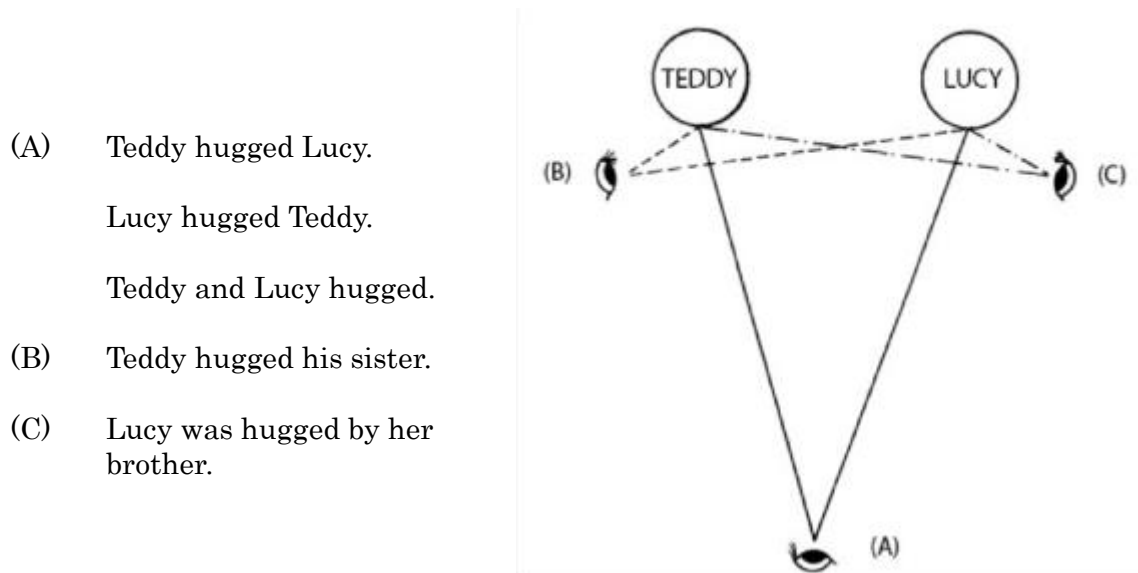
One facet of Linguistic Empathy is that it explains certain linguistic data that defy standard syntactic explanation. It manifests in the speech events produced in the form of a

speaker's momentary and subconscious choice of expression among grammatically or lexically correct options at his/her disposal. Linguistic Empathy has been used to explain how the subconscious selection is reached. For example, when a mother asks her five-year-old son *Did daddy call?* rather than *Did Joey call?* or *Did my husband call?*, the mother is sharing the perspective of the child, who thinks of his father as *daddy* instead of *Joey* or *(his mother's) husband*. The mother, however, more likely considers this same person as *Joey* or *my husband* when expressing her own perspective. Besides playing a role in the choice of referential expressions (*daddy* versus *Joey*), Linguistic Empathy has been proposed as the force behind other lexical choices (*come* versus *go*), as well as behind the choice of the grammatical subject of reciprocal verbs and some active/passive options (see more on this below), reflexive forms (*you* versus *yourself*), and other phenomena observed in several typologically unrelated languages (Silverstein, 1976; DeLancey, 1981; Kuno, 1987; Yokoyama, 1999; Oshima, 2007a).

Since language speakers are typically heavily reliant on their visual sense, this vantage point is often conceived of through visual representation, as in *Figure 2.1* below. This depicts Kuno and Kaburaki's (1977, p. 628) reference to "camera angles" as a manner of experiencing language, where the sentences listed in (A), (B), and (C) correspond to the metaphorical vantage point of (A), (B), and (C). The notion of "camera angle" corresponds to where a camera would be placed to capture the scene depicted in the utterances. The utterances are all logically equivalent, and they vary only in grammatical structure and referential expressions. The utterances in (A) provide a relatively neutral depiction of the scene, whereas the utterances in (B) and (C) convey *Teddy's* and *Lucy's* perspective, respectively.

Kuno's initial description of Linguistic Empathy suggests that a sentence can be conceived of in terms of camera placement as if the scene were filmed. Although this

Figure 2.1: Kuno & Kaburaki’s “Empathy and Camera Angles”



Adapted from Kuno & Kaburaki (1977, p. 628).

embodies much of how Linguistic Empathy exists in language, this notion oversimplifies Linguistic Empathy and falls short of representing its crux. The camera placement aligns nicely with *viewpoint*, in which we literally *see* the scene described in the sentence from the appropriate angle. However, this does not account for sentences that are *experienced* and cannot be *viewed*, in literal terms. Like the theory of perspective discussed by Uspensky (1972), Linguistic Empathy goes beyond the visual experience implied through the use of a camera angle and instead represents the entire visceral experience of an event. The extent to which a speech event portrays this experience reflects Linguistic Empathy. For instance, a sentence like *her stomach turned* is not something for which “camera placement” is appropriate. This sentence is not about the film-able signals of such an event (e.g., a wincing facial expression that indicates someone’s stomach might be turning); rather, this sentence is about the internal experience of one’s stomach turning. The version of this

sentence that would be film-able (e.g., *[it seemed that] her stomach turned*) would shift the perspective from internal to external.

For a classic illustration of a shift in Linguistic Empathy that defies syntactic explanation, we turn to Kuno and Kaburaki (1977) and some examples with the Japanese verbs *yaru* and *kureru*, which share the same logical meaning, *to give*. The difference in these verbs is entirely empathic: *yaru* is used when the speech event is described from the sentential subject's (i.e., the giver's) perspective, and *kureru* is used when the speech event is described from the sentential dative's (i.e., the receiver's) perspective, as seen in the following two sentences, both of which have the core meaning "Taroo gave the money to Hanako."

- (2.3) a. Taroo wa Hanako ni okane o *yatta*. (Subject-Centered)
Taroo-NOM Hanako-DAT money-ACC gave
'Taroo gave the money to Hanako.'
- b. Taroo wa Hanako ni okane o *kureta*. (Dative-Centered)
Taroo-NOM Hanako-DAT money-ACC gave
'Taroo gave the money to Hanako.'

(Adapted from Kuno & Kaburaki 1977, p. 630)

The syntactic structure and case marking of these two examples are identical, and the logical truth value for each sentence is the same (i.e., *Taroo* was the giver of money to *Hanako*). However, despite the fact that both (2.3a) and (2.3b) are grammatical and acceptable, there is not free alternation of these verbs and their corresponding perspectives. By uttering (2.3a), the speaker conveys the perspective of *Taroo*, thereby unequivocally signaling an identification with him. It would most naturally be uttered by someone who is part of *Taroo's* in-group (e.g., *Taroo's* friend or relative). Alternatively, by uttering (2.3b), the speaker conveys the perspective of *Hanako*, thereby unequivocally signaling an

identification with her. It would most naturally be uttered by someone who is part of *Hanako's* in-group (e.g., *Hanako's* friend or relative). For a speaker who is part of an in-group to utter a sentence that corresponds with the perspective of the other entity would sound jarring to the hearer and cause confusion as to the speaker's allegiance. A speaker who is not part of either in-group or who is part of both in-groups choosing between these two verbs must therefore indicate whether to view and convey the logical truth of the utterance from the perspective of the giver (*Taroo*) or from the perspective of the receiver (*Hanako*) by means of verb choice¹.

It is possible for the identification with one of the entities in the sentence to be made lexically explicit when certain referential expressions are used. For instance, uttering the Japanese first person male pronoun *boku* identifies the speaker unequivocally with the speaker's own perspective (i.e., the speaker must identify with himself), whereas uttering the name *Taroo* does not explicitly identify the speaker's perspective. Sentences are unacceptable when the identification with one of the sentential entities is made lexically explicit, and the perspective conveyed by the verb conflicts with the explicit perspective of that sentential entity, as in examples (4) and (5) below.

- (2.4) a. *Boku wa Taroo ni okane o yatta.* (Subject-Centered Verb)
 I - ACC Taroo-DAT money-ACC gave
 'I gave money to Taroo.'

¹ A truly neutral speaker, e.g. a judge in a court case, would avoid either verb and resort to a formal Sino-Japanese high register word like *zouyo-suru* 'gift' or an archaism high register word like *ataeru* 'give', neither of which would be usable in normal speech.

- b. * Taroo wa *boku* ni okane o *yatta*. (Subject-Centered Verb)
 Taroo-ACC I-DAT money-ACC gave
 ‘Taroo gave me money.’
- (2.5) a. * *Boku* wa Taroo ni okane o *kureta*. (Dative-Centered Verb)
 I - ACC Taroo-DAT money-ACC gave
 ‘I gave money to Taroo.’
- b. Taroo wa *boku* ni okane o *kureta*. (Dative-Centered Verb)
 Taroo-ACC I-DAT money-ACC gave
 ‘Taroo gave me money.’

(Adapted from Kuno & Kaburaki 1977, p. 631)

In all examples above, the perspective is explicit by means of the first person pronoun *boku*. In other words, when *boku* is uttered, the speaker conveys his/her own perspective, and the sentence should be experienced from this vantage point. When *boku* is used as the subject of the sentences in (2.4a) and (2.5a), the subject-centered verb *yaru* in (2.4a) correctly corresponds with the perspective of the speaker (*boku*), whereas the dative-centered verb *kureru* in (2.5a) clashes with the perspective that is already established by *boku*. Similarly, when *boku* is used as the indirect object of the sentences in (2.4b) and (2.5b), the dative-centered verb *kureru* in (2.5b) correctly corresponds with the perspective of the speaker (*boku ni*), whereas the subject-centered verb *yaru* in (2.4b) clashes with the perspective that is already established.

Examples (2.4) and (2.5) illustrate that a shift in Empathy perspective to an unnatural or unexpected Empathy locus can hinder the acceptability of an utterance. Kuno and Kaburaki, (1977) and Kuno (1987) use violations of Linguistic Empathy like those in (2.4b) and (2.5a) to inform and establish rules of acceptable perspective taking. Like Silverstein’s (1976) predictions of the distribution of split-ergative case markings, these

rules form Empathy Hierarchies that can predict violations and acceptability of sentences where syntax fails to do so.

2.2.2 Empathy Hierarchies and their pragmasemantic connections. Kuno (1987)

posits that the Degree of Empathy is managed by a series of rules in the form of Empathy Hierarchies (EHs) that determine preferences and constraints for the perspectives shared in utterances. A speaker establishes a vantage point, or Empathy locus, through different discourse channels (e.g., referential expressions, structure, semantic relations, context) that manifest within these hierarchies (Kuno & Kaburaki, 1977; Kuno, 1987), three of which are described below.

(2.6) Surface Structure Empathy Hierarchy: It is easier for the speaker to empathize with the referent of the subject than with the referents of other noun phrases (NPs) in the sentence.

$E(\text{subject}) > E(\text{other NPs})$, (Kuno, 1987, p. 211)

a. Observed: *Juli met a strange man at the party.*

b. Violated: (?) *A strange man met Juli at the party.*

This Surface Structure EH formalizes the notion that perspective is typically established by the subject of the sentence. In (2.6a), the sentential subject *Juli* is the Empathy locus.

However, in (2.6b), the Surface Structure EH selects the Empathy perspective of the subject *A strange man*. The sentence becomes awkward once the name *Juli* is uttered since a proper name like *Juli* is typically more relevant than an indefinite NP like *a strange man*.

In addition to the structural account of establishing Empathy perspective, a speaker typically express identity with her/himself over others by using the first person pronouns *I* and *me*, which is the notion asserted in the Person EH below.

(2.7) Person Empathy Hierarchy (also known as the Speech-Act Empathy Hierarchy):

The speaker cannot empathize with someone else more than with himself.

$E(\text{speaker}) > E(\text{others})$, (Kuno, 1987, p. 212)

- a. Observed: *I like Gary.*
- b. Violated: *(?) Gary is liked by me.*

The Person EH formalizes the notion that a speaker identifies with her/his own point of view over all others. The logical truth value in (2.7a) and (2.7b) above is identical; however, when the Empathy locus shifts from the speaker (*I*) to a third person entity (*Gary*), the acceptability of the sentence suffers. The effect that passive voice exerts on sentences like (2.7b) will be discussed in section 2.2.5. The Topic EH, below, is the final EH to be discussed here, and it addresses the role of context in perspective taking.

(2.8) Topic Empathy Hierarchy: Given an event or state that involves A and B such that A is coreferential with the topic of the present discourse and B is not, it is easier for the speaker to empathize with A than with B.

$E(\text{discourse topic}) \geq^2 E(\text{nontopic})$, (Kuno, 1987, p. 210)

- a. Observed: *Did you hear what happened to John? He got into a car accident with Anna.*
- b. Violated: *Did you hear what happened to John? (?) Anna got into a car accident with him.*

The Topic EH formalizes the notion that entities that are topically relevant are typically the focus of Empathy. Examples (2.8a) and (2.8b) again convey the same logical content;

² It is not clear what motivated Kuno (1987) to use the \geq instead of the $>$ in this EH. This paper will continue the use of the \geq within this EH, but it does not take a strict stance as to which sign is more appropriate.

however, (2.8b) is less acceptable than (2.8a). This is due to the first sentence in each example, in which the referent *John* is mentioned. The question *Did you hear what happened to John?* establishes *John* as a relevant topic for the following discourse, and the Topic EH suggests that Empathy with a discourse topic is more natural than with a non-topic.

When the Empathy relations across these hierarchies align, then the sentence's Empathy perspective is consistent. However, discrepancies in Empathy locus can occur within one utterance, which can often cause marginality in the acceptability of a sentence. Kuno postulates a *Ban on Conflicting Empathy Foci*, which posits that "a single sentence cannot contain logical conflicts in Empathy relations" (1987, p. 207). According to this hypothesis, the Empathy relations must remain logically consistent across these hierarchies. Following Kuno's terms, when the inequalities align, then there is no Empathy violation. However, when the inequalities conflict, this causes an Empathy violation, which affects sentence acceptability. It should be mentioned that Uspensky (1972), Yokoyama (1979, 2000), and Christensen (1994) have all provided counterexamples in Russian and Polish that refute Kuno's ban. In these examples, multiple distinct perspectives occur in the same sentence. Yokoyama and Christensen have argued against the ban on these grounds. Instead, the Ban on Conflicting Empathy Foci can be considered a guideline. Let us consider some examples of the sentences that are in violation, and analyze them using Kuno's ban.

(2.9) *I met a strange man at the party.*

- a. Surface Structure EH: $E(I) > E(a\ strange\ man)$
- b. Person EH: $E(I) > E(a\ strange\ man)$
- c. Topic EH: N/A

- (2.10) *A strange man met me at the party.*
- a. Surface Structure EH: $E(\text{a strange man}) > E(\text{me})$
 - b. Person EH: $E(\text{me}) > E(\text{a strange man})$
 - c. Topic EH: N/A
- (2.11) *I like Gary.*
- a. Surface Structure EH: $E(I) > E(\text{Gary})$
 - b. Person EH: $E(I) > E(\text{Gary})$
 - c. Topic EH: N/A
- (2.12) *Gary is liked by me.*
- a. Surface Structure EH: $E(\text{Gary}) > E(\text{me})$
 - b. Person EH: $E(\text{me}) > E(\text{Gary})$
 - c. Topic EH: N/A
- (2.13) *Did you hear what happened to John? He got into a car accident with Anna.*
- a. Surface Structure EH: $E(\text{John}) > E(\text{Anna})$
 - b. Person EH: N/A
 - c. Topic EH: $E(\text{John}) > E(\text{Anna})$
- (2.14) *Did you hear what happened to John? Anna got into a car accident with him.*
- a. Surface Structure EH: $E(\text{Anna}) > E(\text{John})$
 - b. Person EH: N/A
 - c. Topic EH: $E(\text{John}) > E(\text{Anna})$

Examples (2.9), (2.11), and (2.13) all explicitly invoke two of the three EHs discussed above, and the Empathy relationships for these hierarchies do not conflict. Contrarily, examples (2.10), (2.12), and (2.14) also invoke two of the three EHs, but the Empathy

relationships for these hierarchies are in conflict. For instance, examples (2.11) and (2.12) investigate the sentences *I like Gary* and *Gary is liked by me*, respectively, in terms of the Person EH and the Surface Structure EH. Since the Surface Structure EH places the Empathy perspective on the subject of the sentence, and the Person EH places the Empathy perspective with the speaker (*I/me*) above other NPs, *I* is valid as the Empathy locus by means of both EHs in example (2.11), but the Empathy perspective is conflicting in example (2.12). This conflict, according to Kuno, causes marginality in sentences. Since there is no explicit topic in this example (e.g., no preceding context), the Topic EH was not considered in the examples above unless there was a context sentence given. Kuno does not make explicit how a sentential entity becomes a “topic of the present discourse,” in cases when no preceding context includes a topic, so for now, it is assumed that the sentential entity must be referenced previously. The role of Topic EH when there is not explicit entity that is referenced previously will be discussed in section 2.2.4.

Other linguistic hierarchies have been proposed that are closely related to Kuno’s EHs. Silverstein (1976, 1981) and Deane (1992) propose hierarchies that largely overlap with Kuno’s and describe closely related phenomena. The Silverstein Hierarchy was originally proposed to explain variability in split-ergative languages. Ergativity allows perspectives and identities to be assigned without specific lexical items or structural changes. Ergative-absolutive languages assign the same case marking to the subject of an intransitive verb as the object of a transitive verb, whereas nominative-accusative languages, such as English, assign the same case marking to subjects of transitive and intransitive verbs. Split-ergative languages contain sentences that can vary between sentences with ergative-absolutive case markings and sentences with nominative-accusative case markings. Silverstein establishes a hierarchy based on animacy (e.g., *human* > *nonhuman*, and *1st person* > *2nd person* > *3rd person*, etc.) that predicts which

sentential NPs prefer a given case based on the lexical properties of this NP — that the “split’ of case markings is not random” (Silverstein, 1976, p. 113). In other words, NPs that are higher on the Silverstein Hierarchy more naturally take nominative-accusative case markings, and the NPs that are lower on the hierarchy take ergative-absolutive case markings. This parallels the hierarchies that Kuno proposed for Linguistic Empathy in terms of the ease with which a speaker can identify/empathize with an entity in a speech event. Kuno argues that in order to share an entity’s perspective, that entity must be capable of having a perspective in the first place. That excludes inanimate entities and non-human animate entities, which must be personified in order for the speaker to assume their perspective. Importantly, Silverstein focuses on the lexical properties of the varying NPs when establishing order to the assignment of case markings. DeLancey (1981) acknowledges the Silverstein Hierarchy and builds upon the lexical properties of NPs to include the use of aspect in determining viewpoint in split-ergative languages. Verb aspect (e.g., perfect vs. imperfect) in these languages can shift viewpoint from internal to external without a change in case markings or lexical items. Other languages, such as English, must default to changes in structure, like passivization, in order to accomplish a similar effect.

Deane (1992) applies the notions of animacy, agency, and salience to the NPs of an utterance in order to extend the Silverstein Hierarchy. Deane argues that the extent to which a sentential entity embodies these qualities correlates with how naturally a speaker/hearer should share its perspective. Animacy, agency, and salience unify Deane’s hierarchy of entrenchment with Kuno’s EHs, and these qualities can map onto Kuno’s EHs. The first factor of these factors, animacy, is the conceptual relation that an entity has in common with the speaker. That is, the more in common an entity has physiologically with the speaker, the more natural it is to empathize with this entity. As mentioned above, the notion of animacy is central to the Silverstein Hierarchy (Silverstein, 1976). Animacy

hierarchies rank humans over non-humans, which is typically further delineated in the following order: *Humans > Animals > Plants > Natural Forces > Concrete Objects > Abstract Objects*. The *Humans* portion of this hierarchy most broadly unravels into the following order: *First Person > Second Person > Third Person* (Yamamoto, 1999). Animacy and humanness map directly onto Kuno's Person EH and provide the means to investigate greater granularity to the concepts of *speaker* and *other*. A crucial difference between Deane's entrenchment hierarchy and Kuno's Person EH is that the granularity introduced in the Deane's hierarchy is based on tendencies of Empathy relations, but not strict rules; violating these tendencies does not necessarily result in an invalid utterance. However, the Person EH is based on the binary notion of *speaker* versus *others*, and it claims that utterances that violate this preference, i.e., *others* over *speaker*, are infelicitous.

The agency of a NP is another factor that diminishes sequentially along Deane's entrenchment hierarchy and the Silverstein Hierarchy. With humans at the top, and non-humans toward the bottom, the relevance for establishing agency also diminishes as one moves down the hierarchy. In other words, semantically speaking, humans should be more capable of serving as agents in narrated events, which is a notion that aligns with the animacy hierarchies. Hopper & Thompson (1980) consider agency interrelated with the transitivity and salience of a narrated event. They argue that in discourse, story lines are moved along by performing actions, and that agency is linked with entities performing these actions (Hopper & Thompson, 1980, p. 286). Then, using the Silverstein Hierarchy (1976), they demonstrate the correlation of agency with grounding/salience. Hopper and Thompson posit agency as a factor in determining the degree of transitivity by demonstrating that a sentence with greater agency is predicted to occur in discourse with greater salience. Agency maps onto Kuno's Person EH as those higher on human hierarchy are more likely to be sentential agents.

The salience of a narrated event is another factor that is related to determining the recipients of Empathy perspective. Salience refers to the degree to which an entity or action is likely to enter the mental state of a language user. The salience increases when concepts are common and stable, or if they are contextually activated in speech events (Schmid, 2007, pp. 119 ff.). An item is considered salient if “it has been loaded . . . into current working memory and has thus become part of a person’s center of attention” (Schmid, 2007, p. 119). Similarly, Yokoyama (1986, pp. 31 ff.) argues that topics that are in the center of current concern are more relevant as discourse topics. In other words, with respect to Empathy, the more real and tangible an entity is, the more natural it becomes to share its perspective. Relatedly, Hopper & Thompson (1980) discuss the Transitivity Hypothesis in which the relative level of transitivity in a narrated event is highly correlated with its salience. They argue that transitivity can be predicted based on linguistic parameters like agency, kinesis (i.e., action transfer), and punctuality; and that these parameters are heavily involved with the foregrounding (higher transitivity) and backgrounding (lower transitivity) of the speech event. The terms “foregrounding” and “backgrounding” indicate in binary terms higher and lower degrees of salience, respectively, of an utterance (Cramer, 2011, p. 87), as opposed to a sliding scale such as Fillmore’s Saliency Hierarchy (Fillmore, 1977, p. 78). Hopper & Thompson qualitatively cite universal manifestations of morphosyntactic features that support the Transitivity Hypothesis across unrelated languages, and then establish a quantitative correlation of linguistic parameters with salience that are found within the narrative. They argue that although grammatically valid structures exist that flout the tendency for correlation between salience and transitivity, these manifestations are rare and marked. This argument parallels the grammatically relevant structures of Linguistic Empathy for which violations can be grammatically valid but are marked.

Salience maps onto Kuno's Person EH and the Topic EH. Regarding the Person EH, the notions of humanness that are central to this EH are more real and tangible to a speaker than abstract concepts. Additionally, the concept of a self-referential first person is more salient than a different human, especially one who is grammatically indefinite, plural, or unfamiliar to the speaker. It is highly implausible for a speaker to enter the mind of someone she/he does not know or cannot identify. Animacy is a strong indicator of transitivity, and entities higher on the animacy hierarchy are shown to exist primarily in prominent positions of salience (Hopper & Thompson, 1980). Regarding the Topic EH, discourse in which an entity is mentioned previously increases the salience of that entity with respect to the current concern of the interlocutors. Hopper & Thompson argue that topicality (i.e., definiteness and referentiality) "follow[s] naturally from the fact that foregrounded [i.e., salient] clauses typically continue talking about the same participant within one episode, rather than introducing a new participant" (1980, p. 286). Since background precedes foreground, and background sentences can suggest or predict the topics of the following foreground sentences, Hopper & Thompson argue that topicality, salience, and agency are all closely correlated. Similarly, topicality, salience, and agency have all been discussed as factors that influence the Empathy perspective of utterances and map onto the Empathy Hierarchies as defined by Kuno (1987).

2.2.3 Point of view. Similar to the interdisciplinary notions of Empathy, point of view is a construct that can take shape across disciplines. Point of view can refer to a visual point of view, a dogmatic stance, a cognitive standpoint, or, as in linguistics, these vantages as reflected in language. It should be noted that many scholars use *point of view*, *viewpoint*, and *perspective*, interchangeably. If there is a difference among these terms, it is not

crucial here; instead, the current discussion focuses on understanding point of view/viewpoint/perspective, and its overlapping traits with Linguistic Empathy.

Uspensky (1972) delineates how internal and external perspectives are invoked in artistic expression and shared with the audience, arguing that the “behaviour of a human being can be described either externally (in terms of his objective acts with reference to an external observer), or with reference to his internal state, which is, generally speaking, not accessible to outside observation” (p. 8). In literature, these perspectives can include the thoughts, feelings, and experiences of individual characters, and in fine art, they can include the vantage point of a painting. In order to successfully convey these perspectives, the creator of the piece of work must portray perspective faithfully and accurately with respect to the individual and any cultural expectations. It is the choice of the artist or the author to convey perspectives internally or externally. With respect to literature, Uspensky denotes four categories by which an external or internal perspective can be identified: psychological characterization (i.e., the thoughts, feelings, and experience of a person), verbal characterization (e.g., the dialect or the referential expressions that reflect a belief or perspective), spatial and temporal characterization (i.e., spatiality: akin to Kuno’s visual “camera angle;” temporality: whether the perspective is told in the present, which is typically internal, or past, which is typically external), and ideological evaluation (i.e., the beliefs and stances as reflected in the discourse).

Uspensky does not create a hierarchy of rules with respect to perspective in the arts; instead, he describes and exemplifies how the conveying of perspective is realized using the four categories above. These verbal means reflect perspectives that convey pragmatic meaning beyond the mere truth value of an event. To diverge from the type of expression that a character might use would miss these pragmatic considerations or even seem unnatural, not unlike a violation of a Linguistic Empathy Hierarchy. This description of

perspective in the arts utilizes many of the principles that govern Linguistic Empathy, and, significantly, Uspensky's theory of perspective extends into Psychological Empathy as well. More specifically, the narrator must place her/himself into the world that has been created, she/he must understand what the character must be experiencing (Cognitive Empathy), and she/he must convey these experiences with appropriate expression (Linguistic Empathy) so that characters (and the audience) can have authentic emotional responses (Affective Empathy).

The notion of point of view has additional applications within linguistics. Kuroda (1973) reports that point of view is traditionally considered either reportive, where an outsider describes her/his perception of another's point of view (e.g., *[I think that] Grace is tired*) or nonreportive, where the point of view is reported directly from the source (e.g., *Grace: "I am tired"*). Kuroda's assessment corresponds with Uspensky's notion of internal versus external perspective. DeLancey (1981) argues that viewpoint manifests in language through the implications of words (e.g., *bring* from the viewpoint of the destination, *take* from the viewpoint of the object being taken) and structures (e.g., active versus passive constructions), and that viewpoint manifests semantically in natural attention flow. Natural attention flow is a focal point of attention that is given to the prototypical or natural unfolding of the predicate, and it most naturally begins with the agent of a sentence and flows to the patient. This semantically-defined focal point differs from Yokoyama's (1986) and Schmid's (2007) centers of current concern/attention, which are defined more broadly by the discourse situation, including inter-speaker pragmatic history and context. DeLancey argues that contradictions between viewpoint and the natural attention flow result in unacceptable sentences. This, he argues, explains why *The bear ate the salmon* is more natural than *The salmon was eaten by the bear*: the flow of attention naturally begins with the *eater* and finishes with the *eaten*.

Oshima (2007b) identifies how perspective takes shape in natural language through construction alternations, anaphora, deixis, semantics-pragmatics interface, narrative styles, and discourse. Oshima discusses that perspective is a term that is often used across linguistics in order to describe multiple linguistic constructs (i.e., deixis, logophoricity, Empathy, etc.), and that these constructs are often wrongly equated with one another. Oshima (2007b) argues that although there is significant overlap among deixis, logophoricity, and Empathy, it is necessary to distinguish these constructs so as to avoid confounding them. For example, Oshima teases apart the complexities of *deictic center* from the *Empathy locus*, which other scholars (Culy, 1997; Sells, 1987) label as equivalent. *Deictic center* refers to a reference point that is “the object relative to which the meaning (content) of a deictic expression is determined” (Oshima, 2007b, p. 23), whereas *Empathy locus* refers to the physical or conceptual center from which perspective is experienced by the entities in a sentence. Although these often coincide and the meaning is typically derived from the perspective that the speaker identifies with, Oshima exemplifies and summarizes that despite these significant correlations, they operate under different guidelines and reflect different notions. For a discussion that parses these concepts through examples from Japanese, see Oshima 2007b (ff p. 22).

Oshima’s approach is to tease apart related phenomena that are associated with perspective while establishing a correlation between them. This helps to establish, predict, and utilize individual differences toward understanding and applying Empathy, which is not unlike the approach in this dissertation to attempt to correlate Linguistic and Psychological Empathy. Although the definitions of Linguistic and Psychological Empathy vary, the core principles of the varying points of view can be distinguished through explication and example. Point of view is an essential component of Linguistic and

Psychological Empathy, whether discussed in a social context, as a literary device, or analyzed in linguistic terms.

2.2.4 Sentential topics. The Empathy perspective of an utterance can be influenced through contextual priming, in which entities mentioned in previous discourse become relevant for future discourse. Kuno (1987) uses the term “topicalization” to refer to this *inter*-sentential phenomenon. However, “topicalization” traditionally refers to the phenomenon of *intra*-sentential movement of an argument to the topic of a sentence. In English, this corresponds to the leftward movement of an expression, as in a sentence like *You still have much to learn* transforming into *Much to learn, you still have*. This dissertation adopts Kuno’s use of this term to refer to inter-sentential contextualization.

Previous discourse can contribute to competition among sentential entities to be inserted as the topic of current discourse. For the hearer, this can prime an expectation for certain entities to be the topic of the following sentence. In English, this occurs as competition for subjecthood. As reviewed in section 2.2.2, Kuno establishes an Empathy Hierarchy (EH) to manage the effect of context on Empathy perspective by claiming the following:

- (2.8) Topic EH: Given an event or state that involves A and B such that A is coreferential with the topic of the present discourse and B is not, it is easier for the speaker to empathize with A than with B.

$E(\text{discourse topic}) \geq E(\text{nontopic})$, (Kuno, 1987, p. 210)

- a. Observed: *Did you hear what happened to John? He got into a car accident with Anna.*
- b. Violated: *Did you hear what happened to John? (?) Anna got into a car accident with him.*

In this definition of the EH, Kuno suggests that making an entity relevant in previous discourse increases its right to be empathized with. However, Kuno does not elaborate on whether “topic of the present discourse” refers to explicit mentioning of a topic or making it relevant by some other means. A strict interpretation of “topic of present discourse” could refer only to entities that have been explicitly mentioned previously, as in (2.8a) and (2.8b). In these examples, the speaker mentions *John* in the first sentence (i.e., context sentence), which explicitly makes *John* a relevant discourse topic.

In addition to an explicitly referenced topic, it is possible for a topic to be made relevant through other entities in the sentence, as in *I took the bus to Long Beach. Unfortunately, the driver didn't have change*. This example derives from Prince (1981, pp. 233 ff.), in which she proposes *assumed familiarity* of knowledge and connotations between interlocutors. In this example, the phrase *took the bus* suggests that other entities and actions were involved in this event. Clark (1975) describes this phenomenon as *bridging*, in which the relevant but implicit information derives from a series of implicatures. For example, a bus, a bus driver, paying fare, and other passengers are primed as candidates for being involved in this event. Similarly, in Fillmore's (1976) notion of frame semantics, bus/driver/money are all interrelated and derive meaning from one another in the same semantic frame. This knowledge is culturally shared by the interlocutors, hence they are reasonable impositions. Thus, without explicitly mentioning these other entities, the first sentence makes other entities, such as *the driver*, valid as the topic of the second sentence.

Along with topicalization through previous explicit reference and through semantic priming, an entity can be “coreferential with the topic of present discourse” if it is of mutual current concern between the speaker and the hearer. Yokoyama (1986) argues that the set of notions {*you, me, here, now*} is the minimum set of items that is required to be mutually acknowledged between interlocutors. As a result, the entities *you* (hearer) and *I/me*

(speaker) are, by default, relevant “topic of the present discourse” in a typical exchange between interlocutors. Compare the following sentences in (2.15a) and (2.15b), in which *David* is the only entity mentioned in the previous discourse.

(2.15) *David definitely likes to exercise.*

a. *You first met him at a gym, after all.*

Surface Structure EH: $E(\text{you}) > E(\text{David})$

Person EH: $E(\text{you}) > E(\text{David})$ or N/A

Topic EH: $E(\text{David}) \geq E(\text{you})$

b. *He first met you at a gym, after all.*

Surface Structure EH: $E(\text{David}) > E(\text{you})$

Person EH: $E(\text{you}) > E(\text{David})$ or N/A

Topic EH: $E(\text{David}) \geq E(\text{you})$

Examples (2.15a) and (2.15b) follow the same preceding context sentence in which *David* is the only sentential entity that is explicit. Therefore, according to the strict reading of the Topic EH, *David* should be easier to empathize with than *you*. Additionally, the Surface Structure EH dictates that the entity in subject position is the preferred recipient of the Empathy perspective. If these two factor together, then (2.15b) should be preferred to (2.15a). However, according to a Yokoyama’s notion of mutually acknowledged context, *you* is an entity that is of mutual concern, and therefore, it is a relevant “topic of the present discourse.” This updated understanding of the Topic EH, where “present discourse” includes

{*you, me, here, now*}, along with the further delineation of the Person EH³, would suggest that both (2.15a) and (2.15b) should have complications resulting from conflicts in EHs. Indeed, the acceptability of (2.15a) and (2.15b) is hardly distinguishable. Thus, candidates for topics that are “coreferential with the topic of the present discourse” should include entities that are explicitly referenced, entities that are suggested frame-semantically, and entities that are part of mutual current concern. In all of these cases, competition could arise among multiple allowable topics of following discourse. Depending on the strength of the topicalization, certain contexts could create expectations for certain entities to be preferred over others.

2.2.5 Passive constructions and reciprocal verbs. Passive constructions and reciprocal verbs are distinctive in English in that they can alter the surface structure of a sentence while maintaining the logical truth value. The active/passive alternation in sentences like *Danny likes Alison* and *Alison is liked by Danny* does not alter the logical

³ Kuno’s (1987) formulation of the Person EH, as represented in (2.9), recognizes only the speaker (first person) versus other (non-speaker). In this formulation, *you* would not be higher on the Person EH than David; they would both be considered “other”. However, other formulations of the human hierarchies (e.g., Deane’s entrenchment hierarchy [1992], Silverstein’s animacy hierarchy [1976], explicitly suggest that second person *you* should be higher than proper names like David. Kuno and Kaburaki (1977) also make this distinction in the Person EH by positing that speaker > 2nd person > 3rd person. Additionally, Yokoyama’s (1986) notion that {*you, me, here now*} are necessarily in mutual current concern to start a conversation suggests that *you* should be higher on the Person EH than an unreferenced third person entity.

equivalence of these sentences; similarly, the alternation of subject/object in sentences with reciprocal verbs like *Joey married Jessica* and *Jessica married Joey* does not alter the logical equivalence of these sentences. Reciprocal verbs usually refer to verb forms that convey “each other” in the meaning (e.g., *Joey and Jessica married each other*). In some languages, the reciprocal pronoun can be obligatory, as in the Spanish version *Joey y Jessica se casaron*. In this study, reciprocal verbs are discussed without the explicit use of “each other,” following the implementation of “reciprocal verbs as Empathy verbs” from Kuno (1987, pp. 209 ff.). As previously discussed, Kuno’s Surface Structure EH argues that a speaker expresses identity with the subject of a sentence, and the sentential subject is the Empathy locus. When there are possible alternations in the structure of a sentence, as in passive constructions and reciprocal verbs, then the speaker chooses the subject of the sentence based on which entity is the speaker Empathizes with. Since a sentence’s structure is a common means of reflecting a speaker’s Empathy perspective, this section establishes that usage of passive constructions and alternations in reciprocal verbs provides speakers a structural choice in encoding Empathy perspective.

Passive constructions are often taught as a stylistically less preferred option in English because they can be less direct or more difficult to follow (Strunk & White, 1999 [1958]; Ferreira, 1994). However, the notion that passive constructions should be avoided is not universally true. Let us revisit examples (2.7a) and (2.7b) above, which contain an active sentence that is transformed into a passive sentence:

- (2.7) a. *I like Gary.*
b. (?) *Gary is liked by me.*

I argue that the passive voice in (2.7b) is not *per se* the primary cause of its marginal acceptability. In these examples, and indeed in all passive constructions, one of motivations for passivization is the Empathy locus on the patient rather than the agent of the predicate.

Note that when (2.7b) is compared with another sentence in the passive voice like *Gary is liked by his peers*, the latter is more acceptable. The difference between *Gary is liked by me* and *Gary is liked by his peers* is that the former violates Linguistic Empathy through a conflict between the Surface Structure EH ($E(\textit{Gary}) > E(\textit{me})$) and the Person EH ($E(\textit{me}) > E(\textit{Gary})$), and the latter does not. Furthermore, many consider the passive *I was just mugged (by someone)!* to sound more natural than the active form, *Someone just mugged me!* When the first person pronoun is the subject (*I was just mugged!*), passive is more acceptable than when the indefinite pronoun is the subject (*Someone just mugged me!*) despite the passive construction because the speaker is the Empathy locus in the passive form. Thus, a speaker uses a passive construction when he/she identifies with a sentential entity that is not the agent of the proposition.

Similarly, reciprocal verbs also allow for speaker choice when establishing Empathy perspective. Kuno argues that sentences with reciprocal verbs “share one characteristic with passive sentences: the subject of these sentences has been chosen as subject by the speaker’s design” (1987, p. 211). Reciprocal verbs, which include verbs like *meet*, *date*, and *fight*, are verbs whose subject and object reflect equal participation in the action. As a result, reciprocal verbs can often have multiple constructions which all share the same logical truth value. For instance, *Bob is dating Nancy*, *Nancy is dating Bob*, and *Nancy and Bob are dating (each other)* all describe the same situation. However, Kuno’s Surface Structure EH argues that the subject of the sentence is determined by the identification of the speaker with sentential entities. In other words, the Empathy perspective determines the subject of the sentence. So, while the sentences are all identical semantically, the pragmatic motivation differs.

Sentences with reciprocal verbs and sentences with passive constructions differ in that passives have the additional markedness of a change of grammatical voice (e.g., *likes*

becomes *is liked*). Additionally, when a transitive verb is converted into a passive construction, the agent of the sentence is no longer mandatory but may be added after the predicate as a *by*-agentive. The example above *I was just mugged* does not require the *by*-agentive, and in fact some I argue that adding the indefinite and anonymous pronoun as the agent, as in *I was just mugged by someone*, sounds less acceptable than simply *I was mugged*. Despite these differences, passive constructions and reciprocal verbs share the property of speaker choice as the determining factor for the sentence's final structure, and that this choice directly encodes the Empathy perspective of the utterance.

2.2.6 Universal and individual notions of Empathy. Yokoyama (1986, pp. 167 ff.) depicts Linguistic Empathy into a dichotomy of phenomena: Anthropological Empathy and Personal Empathy. Anthropological Empathy is an objective phenomenon that aligns with the notions of Empathy established by Kuno in which the Empathy locus is based on grammatical (e.g., subjects of passive predicates) or semantic (e.g., human vs. non-human) categories. Like the hierarchies discussed above (e.g., Silverstein, 1976; Kuno, 1987; Deane, 1992), Anthropological Empathy is governed by the “general human tendency to identify with certain referential and semantic categories over others” (Yokoyama, 1986; p. 167). Yokoyama continues by establishing the expression of Anthropological Empathy as a universal phenomenon across languages that does not vary depending on prior knowledge or the relationship between interlocutors.

Personal Empathy, on the other hand, is a subjective phenomenon that is distinctly individualized to reflect both the relationship between interlocutors as well as the attitudes and emotions toward sentential referents. This is manifested by speakers' contributing an “egocentric display of personal factors” that may conflict idiosyncratically with the universal hierarchies of Anthropological Empathy (Yokoyama, 1986; p. 167). An important

distinction is necessary between egocentricity as it relates to animacy hierarchies (i.e., *first person* > *second person*, etc.), and egocentricity as it relates to personal factors. These personal factors can help to determine appropriate identification with NPs that are otherwise equal on the Silverstein Hierarchy with a speaker's personal relationship with these entities (e.g., two proper names, one of whom is in the speaker's in-group), as in (2.16) below. These factors can also place the Empathy locus on an item that should otherwise violate the EHs, as in (2.17) below. Consider the following examples:

(2.16) Context: A mother (B) conversing about her son, Dylan, and his wife, Carolyn, with a friend (A) familiar with everyone involved (i.e., {A and B's knowledge and A and B's current concern include: +Dylan, +Carolyn, +marriage})

- a. A: *So how did they meet?*
B: *They met (each other) while volunteering for Americorps.*
- b. A: *So how did they meet?*
B: *Dylan met Carolyn while volunteering for Americorps.*
- c. A: *So how did they meet?*
B: *(?) Carolyn met Dylan while volunteering for Americorps.*

(2.17) Context: A father speaking to his young daughter:

Daddy wants you to chew with your mouth closed.

For sequence (2.16a-c), the friend (A) knows that her interlocutor's son, *Dylan*, is married to *Carolyn*. Because of the mutual knowledge of B's greater referential proximity to her son (i.e., *Dylan* > *Carolyn*), it is only appropriate for *Dylan* to be the subject of the sentence, be it individually as in (2.16b) or as a compound as in (2.16a). Placing *Carolyn* to the subject position in (2.16c) is grammatically acceptable and valid according to the Silverstein Hierarchy and Kuno's EHs; however, it violates the speaker's Personal Empathy

when the speaker places the Empathy locus away from her son, *Dylan*. Furthermore, in example (2.17), the use of *Daddy* as self-referential for the speaker should also be a violation of the Silverstein Hierarchy and Kuno's Person EH. In this example, *Daddy* is presumably the referential expression that the hearer (the speaker's young daughter) would use, which suggests that the speaker is adopting the perspective of the hearer over his own. This is a phenomenon that was previously expressed by Yokoyama (1994, p. 4). Personal Empathy considers the relationship between the father and his young daughter, which reflects the father's preference to share his daughter's perspective. Personal Empathy accounts for this sort of variation where other EHs do not. Similarly, the regular violations of the EHs that occur in Russian and Polish, as introduced by Uspensky (1972, pp. 20-21), Yokoyama (1994), and Christensen (1994, pp. 39-41), can be accounted for by the empathic associations posited by Personal Empathy.

Additionally, Personal Empathy and discourse topic mutually influence one another. Yokoyama (1986, pp. 59 ff., 255 ff.) points to the phenomenon of imposition, which is the result of a speaker unilaterally deciding that a referent or proposition of personal current concern is part of mutual concern. Yokoyama argues that the speaker and the hearer need not experience a discourse situation identically. In the case of imposition, the state of the addressee's mind as it is and as it is assumed by the speaker are not identical, and the speaker commits an "assessment error" (pp. 31 ff.). An imposition, nevertheless, does not disrupt the exchange as long as the hearer accepts this imposition as reasonable. For there to be an imposition between interlocutors, their relationship and the mood of the discourse must permit such an imposition; otherwise, the addressee can refuse to accept it and the transaction fails, exposing the speaker's violation of a sociolinguistic (or Psychological Empathic) norm. In interactions where there are multiple eligible discourse topics (e.g., multiple items relevant frame-semantically or multiple items mentioned in previous

discourse), and the item that the speaker chooses as topic is not of current concern for the hearer, these items are reasonable candidates for being accepted impositions. When there is less relevance, the imposition becomes more jarring to the hearer. Imposition and Personal Empathy coincide when a topic of discourse that is of personal concern, be it a referent and/or a proposition, is hoisted into the conversation as relevant and appropriate. In these cases, Personal Empathy and imposition can help to validate violations of Kuno's EHs. For an example, let us consider the following:

- (2.18) Context: The speaker (A) has waited quite a long time to get married to her boyfriend (C) and, at long last, they have gotten engaged. The hearer (B) has knowledge that includes {+A dating C, +A waiting to get married, +C has a fear of commitment, - A and C have gotten engaged.}. As indicated by the sentence *Guess what?*, A's dating life is not part of B's current concern prior to the following exchange.

A: *Guess what? He's finally marrying me!*

B: *Wow, congratulations! That's so exciting!*

The utterance *He's finally marrying me*, when preceded by a null context like *Guess what?*, is marginal or unacceptable. This utterance is in violation of Kuno's Person EH. However, Personal Empathy and imposition help to validate the utterance. The imposition of referential knowledge of the pronoun *he* in this utterance, despite being impositional and not objectively appropriate, is retroactively validated by B's utterance. The *he* that A utters can only refer to A's romantic partner (C) that exists in the knowledge sets of both A and B. Secondly, there is an imposition of the disjunction *he will marry me* or *he will not marry me*, which is made relevant by the use of the word *finally* and the accentuation of the verb *marrying*. This accentuation manifests an additional imposition of the information that the question of marriage was up in the air until now, while the word *finally* shows that the

decision to get married was delayed because of the referent *he*. Typically, Linguistic Empathy would deem that the speaker should be locus in a sentence with a reciprocal verb as uttered by A, were it not for the Personal Empathy assumed to be shared between interlocutors by means of speaker imposition. In example (2.18), the speaker commits an assessment error in that she identifies *he* in the current concern of both A and B; however, *he* is not in the current concern of B. Thus, this is an example of a topic that is imposed upon the hearer, and the influence of B's Personal Empathy with A makes it possible to ignore the violation of Anthropological Empathy, (i.e., *He's finally marrying me* instead of *I'm finally marrying him*). If the propositional knowledge that A was waiting to get married was not reasonably impossible into B's set of knowledge, then A's utterance would likely be considered unnatural.

2.3 Empathy in this Study

As discussed, Linguistic Empathy is a linguistic notion contained in narrated events, as opposed to a cognitive notion like Cognitive Empathy or an emotional notion based on the actions and feelings of individuals like Affective Empathy. A person's ability to feel Psychological Empathy influences his/her emotions, speech, actions, and understanding. By contrast, Linguistic Empathy has thus far been considered a property of language that reflects the extent to which a speaker identifies with people or entities in a speech event. Linguistic Empathy has not been considered as a personal trait that can be measured. A person with greater Psychological Empathy is considered more adept at managing and processing Psychological Empathy stimuli; however, a person is not currently considered to have more or less adeptness for Linguistic Empathy. In contrast, what I argue is that a language user's ability to recognize and manage phenomena within Linguistic Empathy can be considered a quality of an individual. This quality exists as a speaker's ability to convey

his/her identification with sentential entities and as a hearer's ability to notice violations of Linguistic Empathy. The varying degrees to which Linguistic Empathy is experienced by speakers and hearers is never discussed explicitly, and this gap in the discussion provides an opportunity to investigate the extent to which individual language users experience Linguistic Empathy.

This dissertation's approach aligns with the uncontroversial stance that Linguistic Empathy is encoded in the linguistic structure by the speaker. However, I argue that in addition to being a feature of linguistic structure, it is also a *measurable* trait in language users. The measure of Linguistic Empathy in speakers would reflect the ability to convey Empathy perspective naturally (e.g., the ability to adhere to rules like Kuno's EHs or to navigate notions like Yokoyama's Personal Empathy) as much as it reflects the addressee's ability to evaluate sentences in terms of their adherence to it. In basic terms, this means that a speaker and a hearer with a greater ability to manage Linguistic Empathy would prioritize Empathy perspective when generating or processing an utterance, whereas a speaker or hearer with less awareness of Linguistic Empathy would more easily neglect Empathy relations and instead prioritize syntactic and semantic validity (e.g., she/he would rate *I like Gary* and *Gary is liked by me* as equivalent). In this dissertation's experiment, only the hearer's measure of Linguistic Empathy is under investigation; the speaker's measure of Linguistic Empathy will remain untested.

The extent to which a hearer's ability to manage Linguistic Empathy is a measurable and systematic phenomenon is under investigation in this dissertation. The measure of Linguistic Empathy in hearer would reflect the ability to notice nuances in perspective taking (e.g., imposition) and violations in Linguistic Empathy (e.g., conflicting Empathy foci). For instance, if an addressee finds an utterance *Gary is liked by me* to sound as natural as *I like Gary*, then I argue that this addressee understands the semantics of the

two utterances but not the significance in alternating perspective between the speaker *I* and the third person referent *Gary*. This person would have a lower sensitivity to violations of Linguistic Empathy. Alternately, a person who finds the utterance *Gary is liked by me* less acceptable would register the negative effect of the speaker identifying with another entity over her/himself. This person would have a higher sensitivity to violations of Linguistic Empathy. Thus, if the measure of Linguistic Empathy in an addressee involves understanding the Empathy perspective of the speaker and the pragmatic implications of this perspective, then evaluating the ability to recognize when a speaker violates Linguistic Empathy amounts to a valid test for this measure.

By conceiving of Linguistic Empathy as a measurable trait in individuals, the overlap of Empathy across linguistic and social psychological notions can be compared. The experimental approach this dissertation takes is to measure an addressee's ability to recognize violations in Linguistic Empathy. The experiment implemented in this dissertation focuses on violations of Kuno's Linguistic Empathy Hierarchies. Baron-Cohen and Wheelwright (2004) support their measure of Psychological Empathy (Empathy Quotient) as meaningful by comparing the results of the EQ test between participants with Autism Spectrum Disorder (a related Psychological Empathy deficit) and participants without this condition. This resulted in a significant correlation between lower EQ scores and participants with high-functioning Autism. Similarly, this dissertation's measure of Linguistic Empathy can be shown as meaningful if the results correlate with a related phenomenon. Psychological Empathy and Linguistic Empathy both incorporate the capacity for adopting viewpoints and understanding others' perspectives, and thus both involve overlapping processes. More specifically, if a person has difficulty with shifting perspective when language is not involved (i.e., low measure of Psychological Empathy), then this difficulty will manifest in managing Empathy perspective in language. I hypothesized that

there exists a significant correlation between Linguistic Empathy sensitivity and EQ, and that this correlation would validate the measure of Linguistic Empathy.

As presented, Empathy is sometimes conceived of as a social and philosophical notion (e.g., Davis, 1994), and other times conceived of very mechanistically with a rigid set of linguistic guidelines (e.g., Kuno, 1987). Beyond the mechanistic view, Linguistic Empathy has been presented as having universal elements, cross-linguistic variability, personal/idiosyncratic influence (Yokoyama, 1986, 2000), as well as suggested to have cultural roots (Oshima, 2007b). Similarly, the notion of Psychological Empathy has been approached more mechanistically in experimental settings and controlled settings (e.g., Baron-Cohen & Wheelwright, 2004). These notions arose independently to account for phenomena that involve perspective taking within language and psychology. One goal of this study is to operationalize Kuno's mechanistic rules of Linguistic Empathy, which lend themselves to an experimental setting, and then to investigate the correlations and applications that these results have with respect to Psychological Empathy. The experimental section of this dissertation examines the extent to which Psychological Empathy and Linguistic Empathy influence one another.

CHAPTER 3

EXPERIMENTAL APPROACH TO EMPATHY

The goal of this chapter is to elucidate the rationale, predictions, and methodology for the experiment in this dissertation. The chapter begins by illuminating extensions of current Linguistic Empathy theory and gaps in previous approaches to Psychological Empathy. The chapter argues in favor of experimentation that examines Linguistic Empathy and Psychological Empathy together in order to maintain objectivity and to investigate a potential correlation between the two forms of Empathy. Subsequently, the chapter describes the process by which the linguistic stimuli were manipulated in order to target the specific Linguistic Empathy Hierarchies. Based on these stimuli, the chapter then submits predictions for the experiment, and concludes with the details of the experimental methodology.

3.1 Rationale for Experimentation

In attempting to uncover new insight into Linguistic Empathy, one could either expand upon existing theory using similar methodologies, or one could approach the theory using an alternate methodology. In researching Linguistic Empathy Kuno and Kaburaki (1977) and Silverstein (1976) follow a prominent and tested trajectory in linguistic investigation. The first step is typically to highlight a range of linguistic phenomena in sentences that have either been generated by the linguist or that derive from attested discourse. Next, the linguist demonstrates that these phenomena are not be accounted for in current theoretical understandings. Finally, the linguist accounts for these phenomena in a nuanced or novel theory. However, since the current study pursues a different line of investigation (i.e., a correlations and a measure of Linguistic Empathy as opposed to a

novel/nuanced theory of Linguistic Empathy), I have chosen a fundamentally different experimental methodology.

When analyzing linguistic phenomena, it is standard for the linguist to make acceptability judgments or for the linguist to solicit acceptability judgments from native speaker informants. There is often variability in acceptability ratings of marginal sentences; however, this variability is not often researched. A hypothesis of the current study is that variance in acceptability does not only apply to the ambiguity of the linguistic phenomena, but also applies to individual differences of those who rate the sentences. To evaluate this hypothesis, this study diverged from the traditional approach to Linguistic Empathy by creating and issuing experiments. This involved first generating language samples based on existing parameters of Linguistic Empathy (i.e., not highlighting new phenomena), and then conducting experiments that yield quantitative feedback regarding these sentences. Instead of this data only applying to the theory of Linguistic Empathy, the data also provides information about the individuals who participated in the experiment. Once quantitative and qualitative patterns emerge with respect to the individuals, then the results provide the measure of a person's sensitivity to these Linguistic Empathy phenomena.

The goal of Linguistic Empathy thus far has been to establish Empathy as a linguistic phenomenon and to show that it operates in utterances generated by a speaker. This study built upon this goal and explored the extent to which a viable measure of Linguistic Empathy in individuals is possible. The present study attempted to conceive of acquiring Empathy measures through a novel methodological approach, to be described below. The study also determined how measurements of Linguistic Empathy correlate with traditional measures of Psychological Empathy.

3.1.1 Measure of Linguistic Empathy. As discussed, the goal of linguists who research Empathy has been to establish and detail the theory of Linguistic Empathy using their own language judgments or judgments from native speaker informants. These judgments are then used in linguistic argumentation for establishing Linguistic Empathy. The tacit assumption for linguists who follow this paradigm is that acceptability judgments from native informants are valued equally, and that judgments can vary. It is assumed that these differences reflect individual idiolects; however, differences in inter-subject acceptability ratings are not typically investigated. Alternatively, the current experimental approach evaluates whether inter-subject acceptability ratings are the result of a systematic difference in language competence with respect to Linguistic Empathy phenomena.

Linguists have not attempted to measure person's capacity for noticing and adhering to the principles of Linguistic Empathy, nor have they hypothesized that this capacity may co-vary with measures of Psychological Empathy. Variation in acceptability judgments of sentences with Linguistic Empathy violations are often attributed to "the strength that the Empathy principles that have been violated have in each person's idiolect" or "mitigating circumstances can be readily found that would make up for the violation" (Kuno, 1987, p. 296). The individual differences in acceptability ratings have been acknowledged, but they have not been researched. The experiment in this dissertation examines these individual differences in acceptability ratings in order to provide insight into the strength of different types of Linguistic Empathy violations, as well as to provide evidence for an approximate measure of Linguistic Empathy within an individual. By determining patterns of the ratings within an individual participant, this study approximated a person's sensitivity to violations of Linguistic Empathy in sentences that are otherwise grammatically correct. It

was hypothesized here that this measure of sensitivity to Linguistic Empathy correlates with a person's measurement of Psychological Empathy.

3.1.2 Measures of Psychological Empathy. The Psychological Empathy measures that were reviewed in the previous chapter have all faced criticism. Criticism of these various measures typically focuses on the theoretical approaches of the tests, such as separating sympathy and or only measuring certain aspects within Empathy. Nevertheless, even if a test was argued to provide only portions of an Empathy measure, these criticisms did not take issue with the accuracy of these measures. For example, despite their critique of the Interpersonal Reactivity Index (IRI) as a measure of only Affective Empathy, Jolliffe & Farrington (2006) claim that IRI results are meaningful, and they use correlations with the results of IRI measures to validate another Empathy test. With respect to EQ, Lawrence et al. (2004) verify that despite its flaws, "EQ provides a reliable and valid way of measuring Empathy via self-report in both healthy individuals and clinical populations" (p. 919). Because of its widespread implementation, its validity in clinical and healthy populations, and its accessibility, EQ was utilized as a measure of Psychological Empathy for this dissertation.

One consistency across all of these assessment approaches is that they all employ a self-report questionnaire. Chronologically, each measure attempted to some extent to improve upon previous tests' criticisms by creating fixes to these issues instead of taking an alternative approach. Although these tests approach Empathy with varying definitions and theoretical vantage points, they attempt to improve upon previous iterations while maintaining this consistent format. Unfortunately, attempting to create a measurement system using this standard format has created a culture for Empathy measures with consistent limitations that are intrinsic to the format. More specifically, each test solicits

responses to questions that directly reflect Empathy and empathic behavior, and inherent shortcomings of self-report questionnaires remain unaddressed. I argue here that questionnaires attempting to accurately reflect Empathy are inherently flawed for three primary reasons. Firstly, basing the measurement of a prosocial trait on direct, self-report questions creates a conflict of interest when there is a disconnect between a person's desire to be portrayed positively and a person's true feelings and behavior. Secondly, issuing a questionnaire that measures an emotionally-founded trait like Psychological Empathy is subject to fluctuate based on the emotional state of the participant. Finally, with regard to test-retest reliability, the nature of a questionnaire familiarizes the participant with the subject matter, thus creating difficulties for reissuing the questionnaire without a sizable lapse of time.

With respect to the first issue, Empathy is a prosocial behavior, which causes an inherent conflict for a person who does not want to self-incriminate; subjects might recognize prosocial criteria in self-diagnostic questions, and they may not respond truthfully if this answer conveys antisocial tendencies. Even if subjects can be trusted to avoid this, a level of self-incrimination is built into these measures, which leaves open the possibility of subconscious bias. Some examples of statements from the EQ test for participants to agree or disagree with are: "I am very blunt, which some people take to be rudeness, even though this is unintentional", "other people tell me I am good at understanding how they are feeling and what they are thinking", and "friendships and relationships are just too difficult, so I tend not to bother with them" (Baron-Cohen & Wheelwright, 2004, pp. 172-173). People might imagine themselves differently than others perceive their behavior, or people might simply hope or want to act differently than they typically feel.

Some of these concerns were in fact reported in by Lawrence et al. (2004), who found a correlation between EQ and social desirability (i.e., a disconnect between how people hope to appear and how they actually feel/ behave). Participants' responses to the EQ test were measured against their responses to the Social Desirability Scale (SDS), which is another questionnaire designed to measure a person's tendency to answer questions with socially preferable responses (Crowne & Marlowe, 1960). The correlation was found in five of the 40 items on the EQ test (three of which were significant). Although a trend in a few individuals who might answer questions with bias could raise questions, the fact that this trend correlates across the entire population of the study raises concern for the impartiality of the questionnaire.

It can be argued that the statistical significance of the test's validity despite these confounds proves the reliability of the EQ. Nevertheless, aside from Lawrence et al. (2004), it is not standard practice to issue an SDS concurrently with the EQ test, or with any Empathy measure. So, if an individual or group beyond that study were to answer questions inaccurately caused by the bias of social desirability, this trend would likely go unnoticed and unreported. Furthermore, while the statistics overwhelmingly suggest that EQ is a reliable measure of Empathy across large number of subjects, Empathy measurements are typically used for diagnostics in individuals with an Empathy deficit. If an individual so desires to avoid a diagnosis of Autism Spectrum Disorder or psychopathy in order to adhere to social norms, the bottom line is that issuing a test with overt and direct questions creates a more explicit opportunity to do so. Rather than intending to improve upon surveys that directly question a person's Empathy, the potential for a test that avoids the potential for conscious/unconscious social desirability should be proposed.

The second issue with respect to Empathy questionnaires is that since Psychological Empathy is an inherently emotional quality, the state of a person's emotions could

influence the results of the questionnaire. A person in an unusually happy or affectionate state, for instance, could provide more prosocial responses than that if that same person were in an unusually agitated state. Of course, a person's emotional state is a variable in any experiment; however, a questionnaire that asks direct questions of a person's socio-emotional tendencies is in direct conflict with emotional objectivity. Even if a questionnaire attempts to recognize behavioral patterns as opposed to emotional states, surely there would be potential for significant emotional impact.

The final issue with Empathy questionnaires deals with test-retest reliability. Lawrence et al. (2004, p. 912) cite the efficacy of test-retest reliability of the EQ test when measured one year apart. While this supports the reliability of the EQ test, it leaves room for logistical difficulties. For instance, if a person wants to verify an EQ score, it hardly seems viable to wait an entire year before retaking the test. There is only one version of typical Empathy questionnaires, so other than shifting to a different type of Empathy test, new questions could not be issued. These restrictions highlight the need for a test that contains multiple possible versions with equivalent stimuli.

3.1.3 Benefits of linguistic experiments. Linguistic experiments can be designed to explore the issue of individual differences with respect to sentence acceptability ratings. The experiment in this dissertation considers acceptability as a numerical gradient. Standard treatment of sentence acceptability by linguists considers sentences as unacceptable (designated with *), acceptable (no designation or \surd), or marginally acceptable (designated by a single question mark, ?, or any number of them, e.g., ???). The current study applies a similar gradient scale onto numerical values. Participants are instructed to rate the sentences numerically on a scale from 1 (low acceptability) to 4 (high acceptability) for all stimuli. Since the experiment design is quantitatively rich, ratings can be averaged

for individual sentences as well as across categories of sentences. Most importantly, this design yields acceptability judgments that will be used to develop an individual measure for Linguistic Empathy sensitivity.

Additionally, if Linguistic Empathy is demonstrated to correlate with Psychological Empathy, then a Linguistic Empathy test could be developed to acquire measurements that would approximate an individual's Psychological Empathy. Psychological Empathy measures are often used in clinical settings as a diagnostic tool for individuals at risk of Empathy deficits (Lawrence et al., 2004; Rogers et al., 2006). Issuing a linguistic test to assess a person's Empathy would be a radically new approach to Psychological Empathy, and it would avoid the three issues described above in section 3.1.2 that arise from the questionnaire-based measurements. Firstly, with respect to social desirability, there is no issue of self-incrimination of antisocial feelings and behavior when it comes to linguistic acceptability judgments. As such, rating a sentence does not factor into social desirability. Indeed, Rogers et al. (2006) conclude that a measure of Empathy with more objectivity and less intrinsic conflict is needed. Secondly, linguistic ratings are an unemotional endeavor. While linguistic experiments are prone to the same emotional variance as any experiment, the subject matter is not inherently emotional, and therefore avoids the conflict created by Psychological Empathy self-report questionnaires. Finally, retaking a test that involves language acceptability is logistically more flexible than a fixed questionnaire. If it is deemed invalid to participate in an experiment with the same linguistic stimuli, then another set of stimuli that manipulate Linguistic Empathy can be issued. The ability to adjust an experiment based on linguistic variables is more flexible than the closed set of questions that ask about a person's Psychological Empathy behavior.

3.2 Linguistic Manipulation of the Stimuli

By implementing psycholinguistic experimentation, this study attempted to account for individual variability in acceptability judgments. The experiment applied the argument that a person's acceptability ratings can measure her/his capacity for recognizing particular linguistic phenomena. The present study focused on phenomena within Linguistic Empathy, in which sentences often sounded marginal or awkward to most, but were grammatically correct. Patterns that emerge from these acceptability ratings would demonstrate that a person's capability for recognizing violations of Linguistic Empathy phenomena is actually a measure of Linguistic Empathy sensitivity. This experiment also investigated inter-subject variability and correlation with the Psychological Empathy measure of Empathy Quotient.

3.2.1 Operationalization of Empathy Hierarchies. The experiment measured the effect of manipulating two of the Empathy Hierarchies (EHs) proposed in Kuno and Kaburaki (1977) and Kuno (1987): Person EH and Topic EH. These EHs are replicated below:

(3.1) Person EH: The speaker cannot empathize with someone else more than with himself.

$E(\text{speaker}) > E(\text{others})$, (Kuno, 1987, p. 212)

(3.2) Topic EH: Given an event or state that involves A and B such that A is coreferential with the topic of the present discourse and B is not, it is easier for the speaker to empathize with A than with B.

$E(\text{discourse topic}) \geq E(\text{non-topic})$, (Kuno, 1987, p. 210)

The first hierarchy, the Person EH, argues that it is unnatural for a speaker to share the Empathy perspective of another entity (e.g., *you* or *s/he*) over the self (*I*). The Person EH

was manipulated through the use of target sentences with structures that permit the reversal of the subject and object, i.e., reciprocal verbs and active/passive constructions, e.g., *I like Gary* versus *Gary is liked by me*. The second hierarchy, the Topic EH, argues that when the topic of a sentence has been mentioned in or made relevant by previous discourse, it is easier for the speaker to empathize with this entity than an entity that was not mentioned nor relevant. The Topic EH was manipulated by including preceding context sentences before the target sentences that either referenced a sentential entity (e.g., *Let me tell you about Gary* references *Gary*), or referenced no entity and were conceived of as occurring 'out of the blue' (e.g., *Guess what?*).

A third hierarchy, the Surface Structure EH, was also relevant in creating the stimuli; however, it was not manipulated as a variable in the experiment. Kuno formulates the Surface Structure EH as follows:

- (3.3) Surface Structure EH: It is easier for the speaker to empathize with the referent of the subject than with the referents of other noun phrases (NPs) in the sentence.

$E(\text{subject}) > E(\text{other NPs})$, (Kuno, 1987, p. 211)

The Surface Structure EH posits that the subject of a sentence is the most natural Empathy locus. Instead of being manipulated as an experimental variable, this EH served as a reference point for conflicts of observation/violation of the Person EH or the Topic EH. When there was a violation of the Person EH or the Topic EH in this experiment, these violations conflicted with the Surface Structure EH. For example, in a sentence like *Gary is liked by me*, there is a conflict between the Person EH and the Surface Structure EH. The Person EH identifies the speaker *me* as the Empathy locus ($E(\textit{me}) > E(\textit{Gary})$), and the Surface Structure EH identifies *Gary* as the Empathy locus ($E(\textit{Gary}) > E(\textit{me})$). However, in

the sentence *I like Gary*, there is no such conflict: The Empathy relation is $E(I) > E(Gary)$ for both the Person EH and the Surface Structure EH.

Across these examples, Surface Structure EH is not manipulated because of the strength that subjecthood has in conveying Empathy perspective in English. However, the relationship between subjecthood and Linguistic Empathy cannot be trusted universally. The strength of subjecthood is varies in other languages, especially those with morphological case marking and freer word order, like Slavic languages (Yokoyama, 1986), Native American languages like Navajo, Cree, or Jinglypaw (DeLancey, 1981; Oshima, 2007a & 2007b), or Japanese (Kuno, 1987; Oshima, 2007a & 2007b). In these languages, while Linguistic Empathy is a major factor affecting the linguistic form of the sentence, it does not necessarily depend on the choice of the grammatical subject the way it does in English. Since English is an SVO language, the speaker typically chooses a sentence structure in which the referent the speaker empathizes with is the grammatical subject. Therefore, the Surface Structure EH is automatically observed, and when there is a conflict between the Surface Structure EH and either the Person EH (e.g. *I like Gary* versus *Gary is liked by me*) or the Topic EH (e.g., *Let me tell you about Gary. I like him*), the Surface Structure EH is observed, and the other EH is violated.

3.2.2 Target sentences and context sentences. The stimuli used in this experiment consisted of two types of sentences: target sentences and context sentences. Target sentences were designed to manipulate the Person EH. These were the sentences that the participants rated, and they consisted of two structurally different groups: a Reciprocal group and an Active/Passive group. Stimuli were presented to the participants as if an external speaker were uttering all sentences in the stimuli, as opposed to the participants imagining the utterances as self-generated. The Reciprocals contained sentences with

reciprocal verbs like *meet*, *date*, or *fight*, in which the truth value of the sentence did not depend on which of the two participants in the sentence was chosen as the grammatical subject; if *I dated Terry* is true, so too is *Terry dated me*. (Reciprocal verbs also allow plural subjects such as in *Terry and I dated [each other]*, but this option was not considered.) In the Active/Passive group, the alternation between active and passive constructions was used to maintain the truth value across sentences; if *I like Sherry* is true, so is *Sherry is liked by me*. Stimuli in both the Reciprocal and Active/Passive groups were limited to sentences in which the first person *I/me* was one of the sentential entities, and a third person proper name was the other. In the Active/Passives, the grammatical subject of the active version was always *I*.

Context sentences preceded target sentences and provided background for the participants to interpret the target sentence. Designed to manipulate the Topic EH, context sentences were divided into two categories: null context and priming context. A null context corresponds with the beginning of an interaction or with utterances introduced by phrases like *Guess what, did you hear the news?* A null context merely establishes the mutual willingness of the interlocutors *I* and *you* ready to engage at a given time and place without designating a specific topic. Yokoyama (1986, pp. 31 ff.) argues that at a minimum, the topics $\{I, you, here, now\}$ are relevant to the discourse because both interlocutors must have them in their current concern in order to communicate. Thus, the topics *I* and *you* should be included in the set of things that are “coreferential with the topic of present discourse” (Kuno, 1987, p. 210), as the Topic EH stipulates, even if they are not explicitly referenced. This means that when *I* is the subject of a sentence that follows a null context, the sentence observes the Topic EH (e.g., *Guess what? I like Gary*). When a third person entity is the subject of a sentence that follows a null context, it violates the Topic EH because this entity

does not have a legitimate reason to be part of mutual current concern (e.g., *Guess what? Gary is liked by me*).

In priming contexts, third person entities were explicitly referenced in order to create the expectation that these entities could be used as a topic in future discourse. For example, the relevance of *Gary* is elevated by the content of the sentence *Let me tell you about Gary*. Thus, when *Gary* is mentioned, it becomes a candidate for topic of a sentence that follows; the mutual current concern is revised and now contains both *I* and *Gary*.

Which of the two is chosen by the speaker as the focus of Empathy thus becomes contested.

Let us consider the following sentences:

(3.4) *Guess what, did you hear the news? Gary is liked by me.*

- a. Surface Structure EH: $E(\textit{Gary}) > E(\textit{me})$
- b. Person EH: $E(\textit{me}) > E(\textit{Gary})$
- c. Topic EH: $E(\textit{me}) \geq E(\textit{Gary})$

(3.5) *Let me tell you about my friend Gary. He is liked by me.*

- a. Surface Structure EH: $E(\textit{He}) > E(\textit{me})$
- b. Person EH: $E(\textit{me}) > E(\textit{He})$
- c. Topic EH: $E(\textit{He}) \geq E(\textit{me})$

In example (3.4) there is no mention of any entity in the context sentence *Guess what, did you hear the news?*, so the relevant entities for topic in the following discourse derive from the NPs of mutual current concern, i.e., $\{I, \textit{you}\}$. Thus, the Empathy relation of the Topic EH is in conflict with the Surface Structure EH in (3.4). A sequence with a priming context like (3.5) sounds better than the equivalent sequence with a null context like (3.4) because there is no conflict between the Topic EH and the Surface Structure EH in the priming context (though it is still marginal because the Person EH is in conflict). In

(3.5), *Gary* is mentioned in the context sentence, which enters *Gary* into mutual current concern. Thus, *Gary* is a relevant entity to be the topic of the following discourse.

A sequence similar to (3.5) would sound even more natural if there were further contextualization of the third person referent *Gary*. For example, let us consider the following:

(3.6) *Let me tell you about my friend Gary. He's liked by his peers, he's liked by his friends, and he is liked by me.*

The final phrase in (3.6), *he is liked by me*, sounds better in this example than in (3.4) or (3.5) because of the extended context of which *Gary* is clearly the topic. Furthermore, this extended context arguably makes *Gary* more competitive than *I* to be the topic, as in the following:

(3.7) *Let me tell you about my friend Gary. He's liked by his peers, he's liked by his friends, and I like him.*

If the target sentence *I like him* in (3.7) were judged as marginal, this would confirm that long contextual strings with a heavily emphasized topic can prioritize *him/Gary* over *I* for a clear violation of the Topic EH. However, the practical considerations for this experiment prevented the design from including stimuli with this type of extreme contextual priming. Instead, the strength of the contextual priming was tested in sequences that resemble those like (3.5) in which the expectation for the explicitly mentioned topic, *Gary*, creates competition between *Gary* and the un verbalized topic of mutual concern, *I*. I stipulate that when the explicitly referenced entity is topic of the following discourse, the Topic EH is observed, like in example (3.5). Contrarily, when the topic of the following discourse is *I*, this competition triggers a violation of the Topic EH, as in (3.8) below:

(3.8) *Let me tell you about my friend Gary. I like him.*

A violation to the Topic EH occurs in two conditions. Let us consider the following sentence quartet in order to contrast these conditions using the following examples of stimuli from the experiment:

(3.9) *Matt can be such a bully. This morning, I fought Matt.*⁴

(3.10) *Matt can be such a bully. This morning, Matt fought me.*

(3.11) *Guess what happened this morning, I fought Matt.*

(3.12) *Guess what happened this morning, Matt fought me.*

The first type of Topic EH violation corresponds with the previous explanation of (3.5) and (3.6), and applies to (3.9). This violation occurs when a sequence with a priming context is followed by a target sentence with *I* as the subject. In (3.9) and (3.10), *Matt* is referenced in the context sentence. Once this entity is introduced into the discourse, it creates competition with the other relevant entities $\{I, you\}$. This competition creates a conflict between the expectation of what the topic will be and what is uttered. Sentences like (3.9), for this reason, are considered in violation of the Topic EH according to this experiment design. Sentences like (3.10) observe the Topic EH because *Matt* is the subject of the target sentence. The second type of Topic EH violation occurs when a sequence with a null context is followed by a target sentence with a third person referent. The contexts in (3.11) and (3.12) contain no competition for topic; of the entities in the target sentence, the topic *I* is

⁴ Like with all reciprocal verbs, some readers might be tempted to apply an agentive reading to the subject of *fight*, so that the utterance means something like *Matt picked a fight with me* or *Matt assaulted me*. However, I argue that *fight* entails reciprocal confrontation between the two sentential actants, as evidenced by the semantic oddness of the utterance *Matt fought me, but I did not fight Matt*. If both participants do not engage in the *fighting*, then the attempt to *fight* is unsuccessful.

the only viable option for the subject of the sentence. Thus, (3.11) observes the Topic EH since *I* is the subject of the target sentence, and (3.12) violates it since *Matt* is the subject of the target sentence. The two types of violations can be contrasted between examples (3.9) and (3.12). In (3.9), there is competition for topic of the context sentence (i.e., *Matt* is explicitly referenced, *I* is not referenced but is relevant by default; *I* is used as topic), and in (3.12), there is no competition (i.e., *Matt* is not referenced and not relevant, *I* is not referenced but is relevant by default; *Matt* is topicalized).

Target sentences within the same item group have obvious differences caused by reciprocal or active/passive alternation; for example, the difference between the target sentences in (3.9) *I fought Matt* and (3.10) *Matt fought me* is the alternation of *Matt* and *I/me*. Aside from this difference, it was necessary to design the target sentences to be as homogenous as possible in order to isolate these experimental variables. As a result, the effort toward minimizing differences across sentences resulted in some stimuli with constructions that were less than ideal. Let us consider the alternation between (3.9) *I fought Matt* and (3.10) *Matt fought me*. The use of the name *Matt* in both of these sentence constructions was necessary to compare these alternations. However, when the sentence was preceded by the priming context, as in (3.10) *Matt can be such a bully. This morning, (Matt fought me)*, the mentioning of the name *Matt* in the context sentences creates a possibility (and a preference) for a pronoun to be used in the target sentence. However, instead of using the pronoun *he*, the name *Matt* is repeated. Although the repetition of the proper name *Matt* can affect the acceptability of the stimulus, it was necessary in order to keep sentences homogenous within item groups. Indeed, Gordon, Grosz, and Gilliom (1993) demonstrate the *repeated-name penalty*, in which proper names that are the center of focus and are repeated present more difficulty in processing than their pronominal counterpart.

This issue was also dealt with in some stimuli with use of backward pronominalization, in which a pronoun appears before a coreferential proper name instead of the proper name appearing first and the pronoun appearing subsequently. In these stimuli, the entity was referenced in the priming context using a pronoun, and the target sentence contained the proper name. For example, a stimulus with backward pronominalization resembles the following: *He can be such a bully. This morning, Matt fought me.* Cole (1974) discusses how sentences with backward pronominalization are often considered marginal, and he argues that sentence acceptability in these sentences can depend on syntactic and semantic constraints, as well as intonational variation and individual preferences. The use of backward pronominalization eliminated the issue of repetitive reference to the same person using a name in subsequent sentences; however, it introduced its own potentially marginalizing effects.

There was another type of context sentence that used parallel grammatical subjects, which is exemplified in (7) and (8) from *Table 3.1* below. This type of context does not have the drawbacks of repeating the proper name or of backward pronominalization. Parallel grammatical subjects occur in sentences such as *Jack fell down and Jill came tumbling after* with parallel grammatical subjects (*Jack* and *Jill*) belong to a previously established topic set (Yokoyama 1986, 314 ff.). Coming after *Jack fell down, Jill* in the coordinated parallel sentence (*and Jill came tumbling after*) is recognized as a member of a topic set {*Jack, Jill*}. In the same way, coming after *Dan and Sue have had quite a busy morning, Dan got a haircut*, in the coordinated parallel sentence (*and Sue was massaged by me*) should be recognized as a member of a topic set {*Dan, Sue*}. Both the explicit mention of *Sue* and the implication of the topic set affect interference between the two entities now high on the Topic EH (*I* and *Sue*).

3.2.3 Conditions of the stimuli. The sentence quartets in the experiment gave rise to four stimulus types, which are defined as follows: the observation of both EHs (condition A), the violation of the Topic EH and the observation of the Person EH (condition B), the observation of the Topic EH and the violation of the Person EH (condition C), and the violation of both EHs (condition D). The four stimulus types are abbreviated to the condition labels of {A, B, C, D} so that they can be compared across Reciprocal and Active/passive groups, as well as placed into graphs and analyses in the experimental results. Participants were asked to rate the acceptability of the target sentences given the previous context sentence.

In *Table 3.1*, stimulus examples are organized by the type of context, target, violation (+ or -), and condition (A, B, C, D). The examples of a null context for a reciprocal verb *fight* are presented as (1) and (2), and examples of a priming context for the same reciprocal verb are (3) and (4). Examples of a null context for an active/passive pair with verb *massage* are (5) and (6), and examples of the priming context for the same active/passive verb are (7) and (8).

Table 3.1: Example Trials, Violations, and Conditions

	Context	Target sentence	Violations T P	Condition Label
1	Guess what happened this morning?	I fought Matt.	+ +	A
2	Guess what happened this morning?	Matt fought me.	- -	D
3	Matt can be such a bully. This morning,	I fought Matt.	- +	B
4	Matt can be such a bully. This morning,	Matt fought me.	+ -	C
5	Good to see you. Can I tell you about what happened last night?	I massaged Sue.	+ +	A
6	Good to see you. Can I tell you about what happened last night?	Sue was massaged by me.	- -	D
7	Sue and Dan have had quite a busy day. Dan got a haircut, and	I massaged Sue.	- +	B
8	Sue and Dan have had quite a busy day. Dan got a haircut, and	Sue was massaged by me.	+ -	C

Table 3.1: Example trials for all types of stimuli (1-4 Reciprocal, 5-8 Active/Passive) with columns for contexts, targets, Topic and Person EH observation (+) or violation (-), and condition label.

3.3 Predictions

3.3.1 Stimulus types and Empathy Hierarchies. In the Reciprocal group, the Person EH was manipulated by creating stimuli in which the grammatical subjects and objects alternated between first and third persons. In the Active/Passive group, the Person EH was similarly manipulated by creating stimuli in which the object of an active sentence was used as the subject of the passive version, and the subject of an active sentence was used as the *by*-agentive in the passive version. I predicted that in null contexts, in which *I* is established as a default topic, target sentences with first person grammatical subject (e.g., *I fought Matt* or *I massaged Sue*) should be more acceptable than targets with third person

grammatical subject (e.g., *Matt fought me* or *Sue was massaged by me*). This is demonstrated in *Table 3.1* in examples (1) *Guess what happened this morning? I fought Matt.* and (5) *Good to see you. Can I tell you about what happened last night? I massaged Sue*, where the Topic (T) and Person (P) EHs are both satisfied (+), and these stimuli are defined as (T+, P+), condition A. The Topic EH and Person EH are both violated (-) in examples (2) *Guess what happened this morning? Matt fought me* and (6) *Good to see you. Can I tell you about what happened last night? Sue was massaged by me*, and these stimuli are defined as (T- P-), condition D.

The priming context introduced a third person entity (*Matt* or *Sue*) into the discourse beforehand, thereby escalating it on the Topic Empathy scale. I predict that the interference between the two entities high on the Topic EH (*I* and *Matt*, or *I* and *Sue*) would be in competition with one another, which would negatively affect the acceptability of the target sentences when the Person EH was satisfied. In these cases, I treat the Topic EH as violated when the context suggests *Matt* or *Sue* as the topic, but the subject of the following target sentence is *I*, as in examples (3) *Matt can be such a bully. This morning, I fought Matt* and (7) *Sue and Dan have had quite a busy day. Dan got a haircut, and I massaged Sue*. These sentences were defined as (T- P+), condition B. Alternatively, the Topic EH is treated as satisfied when the context suggests *Matt* or *Sue* as the topic, and the subject of the following target sentence is *Matt* or *Sue*, as in examples (4) *Matt can be such a bully. This morning, Matt fought me* and (8) *Sue and Dan have had quite a busy day. Dan got a haircut, and Sue was massaged by me*. Meanwhile, the Person EH is violated in these examples since the third person is the subject, and the first person is the object (reciprocals) or *by-agentive* (active/passives). These sentences were defined as (T+ P-), condition C.

Let us examine in some detail the two relationships between a context sentence and a topic sentence that can cause a violation of Topic EH (T-). The first relationship can be

found in examples (2) *Guess what happened this morning? Matt fought me* and (6) *Good to see you. Can I tell you about what happened last night? Sue was massaged by me*, in which the null context is followed by a target sentence with a third person subject. In these examples, the null context does not mention a third person entity, which means that the only relevant topics are {*you* (hearer/participant), *me* (speaker of experiment text), *here*, *now*}. Thus, the preferred topic of the following sentence should default to the first person. In these examples, there is a violation of the Topic EH because the third person subject (*Matt* or *Sue*) is not an established discourse topic, yet it is in the subject position. Thus, I predict that examples with a T+ such as (8) *Sue and Dan have had quite a busy day. Dan got a haircut, and Sue was massaged by me* should sound better than (6) *Good to see you. Can I tell you what happened last night? Sue was massaged by me* despite having the same target sentence because (6) violates the Topic EH and (8) does not.

The second relationship between the context and the target sentence in which T- occurs can be found in examples (3) *Matt can be such a bully. This morning, I fought Matt* and (7) *Sue and Dan have had quite a busy day. Dan got a haircut, and I massaged Sue*, in which the priming context is followed by a target sentence with a first person subject. In these examples, the priming context mentions third person entities, *Matt* in example (3) and *Sue and Dan* in example (7), which places these entities into the set of mutual current concern). In these instances, T- signifies that there is competition between possible topics to be the subject of the context sentence. I predict that examples like (5) *Good to see you. Can I tell you what happened last night? I massaged Sue* will be rated higher than examples like (7) *Sue and Dan have had quite a busy day. Dan got a haircut, and I massaged Sue* despite having the same target sentence. I argue for this prediction because even though the target sentence *I massaged Sue* is identical in each, there is no competition for the topic/subject entity in example (5), and there is competition for the possible topic/subject in

example (7). Thus, by referring to entities in the context sentences, an increased expectation for this entity to be the topic of the following (target) sentence is created for the addressee/participant. When this expectation is not realized, it is considered a violation of the Topic EH (T-).

3.3.2 Experiment design. Overall, the experimental design is considered successful when it produces a statistically significant interaction between the two manipulations of the Topic EH, designated as “Context (Null vs. Priming)” and the two manipulations of the Person EH, designated as “Subject (First vs. Third)” for the Reciprocal Group and “Structure (Active vs. Passive)” for the Active/Passive group. This interaction has four defining conditions: Null First/Active (condition A), Null Third/Passive (condition D), Priming First/Active (condition B), Priming Third/Passive (condition C). A significant interaction of Context x Subject and Context x Structure would demonstrate that each of the four conditions {A (T+ P+), B (T- P+), C (T+ P-), D (T- P-)} yield different and predictable acceptability measures relative to the other conditions. The predictions followed that when a Linguistic EH is violated, the acceptability ratings are lower than when it is observed. Condition A contains no violations, and it should be the highest rated condition. Condition D contains two violations, and it should be the lowest rated condition. Since conditions B and C each contain one violation, I predict that the ratings of both B and C to fall between A and D. Thus, if the measures of the four conditions in the interaction of Context x Subject or Context x Structure are significant, then the follow-up paired-sample t-tests will show that $A > \{B, C, D\}$ and $\{A, B, C\} > D$.

There is no prediction regarding the relative difference between conditions B and C; however, this difference is important for investigating the relative strength of the two hierarchies. B (T- P+) represents the violation of Topic EH while the Person EH is observed.

Given this assumption, B represents the independent contribution of the Topic EH. Similarly, C (T+ P-) represents the independent contribution of the Person EH. Consequently, $B > C$ would imply that the violations of the Person EH are stronger (i.e., result in lower ratings); conversely, $C > B$ would imply that violations of the extended Topic EH are stronger. Therefore, B-C is a first step toward a measure of the asymmetry between the two hierarchies. However, this asymmetry is systematically influenced by instances of imposition, which itself contains subjective factors (e.g., speaker's whim, egocentric preoccupation, the cooperative mindset or lack thereof on the part of the addressee, the cultural conventions, etc.). Thus, this asymmetry is predicted to be approximate, at best.

To summarize, the subjects were expected to find sentences more or less acceptable depending on the conditions given below in *Table 3.2* (Reciprocal group) and *Table 3.3* (Active/Passive group).

Table 3.2: Reciprocal Stimulus Matrix

Context	Null		Topicalizing 3 rd Person	
Sentence Subject	First Person	Third Person	First Person	Third Person
Topic Empathy Hierarchy	Observed	Violated	Violated	Observed
Person Empathy Hierarchy	Observed	Violated	Observed	Violated
Violations (T, P)	(T+ P+)	(T- P-)	(T- P+)	(T+ P-)
Condition	A	D	B	C
Acceptability Rating	High	Low	Mid	Mid
Example Context	Guess what happened this morning?	Guess what happened this morning?	Matt can be such a bully. This morning,	Matt can be such a bully. This morning,
Example Target Sentence	I fought Matt.	Matt fought me.	I fought Matt	Matt fought me.

Table 3.3: Active/Passive Stimulus Matrix

Context	Null		Topicalizing 3 rd Person	
Structure	Active	Passive	Active	Passive
Topic Empathy Hierarchy	Observed	Violated	Violated	Observed
Person Empathy Hierarchy	Observed	Violated	Observed	Violated
Violations (T, P)	(T+ P+)	(T- P-)	(T- P+)	(T+ P-)
Condition	A	D	B	C
Acceptability Rating	High	Low	Mid	Mid
Example Context	Good to see you. Can I tell you about what happened last night?	Good to see you. Can I tell you about what happened last night?	Sue and Dan have had quite a busy day. Dan got a haircut, and	Sue and Dan have had quite a busy day. Dan got a haircut, and
Example Target Sentence	I massaged Sue.	I massaged Sue.	Sue was massaged by me.	Sue Was massaged by me.

Tables 3.2 and 3.3: The matrices demonstrate the EH violations for Context (Topic EH)

and Subject (Person EH) for Reciprocal verbs (*Table 3.2*) and for Active/Passive constructions (*Table 3.3*). The matrices predict acceptability ratings of sentences relative to other sentence types based on these violations. In descending order, these ratings are High (no violation), Mid (one violation of either EH), and Low (violation of both EHs).

3.3.3 Sensitivity to Linguistic Empathy. The four types of stimuli, A, B, C and D, provide several different representations of Linguistic Empathy where one or both of the EHs in question were violated. As mentioned above, in this experiment, the stimuli that did not violate any Linguistic EH (i.e., T+ P+, condition A) are predicted to be rated as with the highest acceptability across participants. The stimuli that violated both Linguistic EHs (i.e., T- P-, condition D) are predicted to be rated with the lowest acceptability across participants. Thus, the difference between the ratings for stimuli of condition A and ratings for stimuli of condition D provided the crudest reflection of how violations of the Topic EH and the Person EH with respect to the Surface Structure EH are perceived. The difference between condition A and condition D therefore represents a person's tendency to notice violations of these two Linguistic Empathy Hierarchies relative to sentences with no violations of these hierarchies. The prediction follows that the greater the distance is between A and D for an individual participant, the more heightened that person's awareness is to violations of Linguistic Empathy. This difference, thus, is the best representation of an individual's sensitivity to Linguistic Empathy in this experiment design.

3.3.4 Correlations between Linguistic and Psychological Empathy. In addition to the manipulation of Empathy Hierarchies and the potential measures of Linguistic Empathy sensitivity, this experiment measured the EQ for each participant. It was hypothesized that if there is a correlation between a person's Linguistic Empathy (i.e., a person's sensitivity to Linguistic Empathy violations) and Psychological Empathy (i.e., EQ), this would signify that the two distinct forms of Empathy are somehow overlapping or related. This study predicted that the acceptability measure of Linguistic Empathy is related to Psychological Empathy (EQ): if a person demonstrated a heightened awareness to violations of Linguistic

Empathy, then that person should also demonstrate an increased measure of Psychological Empathy. This study also predicted that Linguistic Empathy and Psychological Empathy correlate positively with each other. I argue that the correlation would be most significant between a participant's EQ score and the difference between points A and D. As a person's EQ score increases, so does the distance in ratings between (Null, First/Active) stimuli (T+ P+, condition A) and (Null, Third/Passive) stimuli (T- P-, condition D). Moreover, in this view, a person's capacity for sensitivity to Linguistic Empathy is measurable within individuals, and there are individual differences in Linguistic Empathy just as in Psychological Empathy.

3.4 Methodology

3.4.1 Participants. Thirty-four UCLA undergraduate students (19 females, 15 males) participated in the experiment in exchange for course credit. One additional participant was run, but did not complete the experiment due to equipment failure. All participants were classified as right-handed based on self-report and observation of right hand dominance for writing. All participants were also native speakers of English between 18 - 22 years of age.

3.4.2 Stimuli. The experimental session contained a mixture of trials intended to manipulate a number of different variables related to Linguistic Empathy. The set of 208 items presented to each participant was composed of twelve different item groups, where an item group includes all possible sentence variants presented with a particular verb. These twelve item groups consisted of three types of items: reciprocal verbs, active/passive verb structures, and sentences with genitive phrases. The items with genitives manipulated

different variables that do not map simply onto the variables of the other two groups, and thus, they are not discussed in this study. Additionally, the reciprocal and active/passive sets each included one item that manipulated separate variables from the other items in that group, on an exploratory basis. Those items are also excluded from the analysis. The data discussed here thus includes two sub-experiments: the Reciprocal group consists of three item groups (48 trials) using reciprocal verbs, and the Active/Passive group consists of three item groups (48 trials) in which active/passive construction was contrasted.

The reciprocal sentences included item groups with the following three verbs: *fought*, *(finally) met*,⁵ and *dated*. Eight trials in each item group had a first person pronoun as the grammatical subject and a single-syllable proper name as the object, e.g., *I fought Matt*. The subject-object choice was reversed for the other eight trials, with the third person grammatical subject and a first person object (e.g., *Matt fought me*).

The active/passive constructions included item groups with the following three verbs: *coached*, *stabbed*, and *massaged*. For those item groups, eight trials included an active construction with a first person pronoun as the grammatical subject and a single-syllable proper name as the object (e.g., *I massaged Sue*), while eight trials included a passive construction with the third person subject and first person *by*-agentive (e.g., *Sue was massaged by me*).

In each of the Reciprocal and Active/Passive groups, half of the trials were preceded by a null context sentence, while half were preceded by a priming context sentence, as

⁵ *Met* is intended to mean “made the acquaintance of,” which is why the adverbial *finally* was included with these stimuli. Kuno (1987) used the verb *met* in his examples as “to run into;” however, I argue that “made the acquaintance of” carries an equal or greater reciprocal meaning.

described above. Context length was controlled across sentences within each set within five total characters. Trial order was randomized for each participant, and this avoided possible biases of neighborhood effects from surrounding trials that could have shared or differed in experimental conditions.

Additionally, this experiment was designed to explore potential hemispheric differences in processing Empathy. Language processing predominantly occurs in the left hemisphere (Taylor & Taylor, 1990); however, there is reason to believe that the right hemisphere is selectively involved in social aspects of human interaction in general, and in the pragmatics of natural discourse in particular (Brownell & Joannette, 1993). Furthermore, there is evidence that the right hemisphere is selectively involved in Psychological Empathy (Shamay-Tsoory, Tomer, Berger, & Aharon-Peretz, 2003). Given the hypothesis in this dissertation that Linguistic Empathy is correlated with Psychological Empathy, this leads to the conjecture that the right hemisphere is selectively involved in Linguistic Empathy as well. The experiment was devised to be able to examine this issue by lateralizing the target word to one visual hemifield and requiring the participant to rate the stimulus with the ipsilateral (matching) hand. In this way, the input and output would be restricted to one hemisphere and minimize the involvement of the other hemisphere. However, the ANOVA that incorporated hemisphere as an independent variable showed no main effects nor first- or second-order interactions with Hemisphere. Consequently, the results were collapsed across this variable. Nevertheless, this variable may become prominent if the analysis were extended to search for an electrophysiological correlate for Linguistic Empathy.

3.4.3 Procedure. Participants first completed an inventory of linguistic and cultural background, followed by an EQ test (Baron-Cohen & Wheelwright, 2004) to produce a

measure of Psychological Empathy. During the main cognitive task that followed, participants were positioned with their eyes 57.3cm from the monitor while resting on a chin rest. At that distance, one degree of visual angle is equal to one centimeter of distance on the screen. Participants responded to each trial by pressing one of four keys corresponding to the level of sentence acceptability, with cartoon faces shown on the response screen at the end of each trial to illustrate the levels of acceptability of each response key. Participants responded with the hand ipsilateral to the visual field target; thus, if the target was left-lateralized, they should respond with the left hand using the keys “x”, “d”, “f”, or “v”, corresponding to “worst”, “bad”, “good”, and “best” ratings, while if the target was right-lateralized, they should respond with the right hand using the keys, “b”, “h”, “j”, or “m”, again corresponding to “worst”, “bad”, “good”, and “best” ratings. Participants were instructed to indicate how “natural or acceptable” they judged the target sentence to be if they were to hear it from an external speaker.

The experimental session began with a practice block of twelve trials, followed by two blocks with 104 trials each. The trial began with a fixation cross flashed in the center of the screen for 180ms. Then, a context sentence appeared centrally for 1500ms above the fixation cross; this sentence then disappeared and another brief (100ms) fixation cross remained. Next, the first part of the target sentence appeared centrally for 1500ms, but with a blank line for the critical final word. Lastly, the final word of the sentence, or target word, appeared lateralized for 180ms at one degree of visual angle to the right or the left of the edge closer to fixation, subtending from two to five degrees. Immediately after the target word, a screen appeared that reminded the participants of the response options, which remained until the response was given. At the end of each trial, a screen appeared that reminded the participant of the correct response pattern of the keys (*x, d, f, v* for the left hand, *b, h, j, m* for the right hand). When this screen appeared, this unfortunately

created variable delay between processing the display and responding to the target, which contaminated response time as a potential variable. Consequently, reaction time was not considered as a variable to measure performance in this task. *Figure 3.1* below visually demonstrates the structure of each trial.

Figure 3.1: Sample Trial of the Experiment.

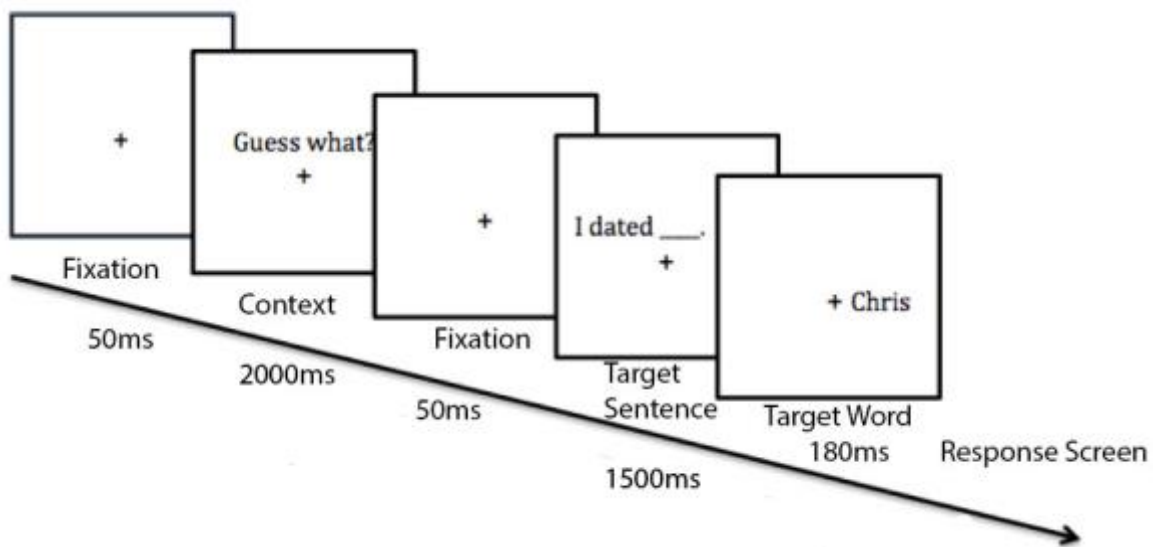


Figure 3.1: This figure illustrates the screens presented to participants during a single trial of the experiment. This particular sample trial consists of a null context for an unmarked reciprocal item. Since the target is flashed on the right side of the screen, the response to this item should be with the right hand.

CHAPTER 4

EXPERIMENT: CORRELATIONS BETWEEN LINGUISTIC AND PSYCHOLOGICAL EMPATHY

This chapter provides the results, discussion, and extensions for the psycholinguistic experiment described in the previous chapter. The results are split into three sections: results for items with reciprocal verbs, results for items with active/passive sentences, and the combined results. A discussion of the results follows that interprets the significance of these findings with respect to the Linguistic Empathy Hierarchies (EHs) and Psychological Empathy. This chapter concludes with the limitations and several potential extensions of this experiment.

4.1 Results

Empathy Quotients (EQs) were obtained for 32 of the 34 participants (19 females, 13 males). Scores ranged from 25-73 out of a possible range of 0-80, with a mean score of 46.8. The mean score for females was 49.7, and the mean score for males was 42.7; this gender difference missed significance, $t(30) = 1.81$, $p = .08$, but such a difference would be consistent with prior literature. Baron-Cohen and Wheelwright (2004) found the average EQ ratings for females to be 47.2 (SD = 10.2) and for males to be 41.8 (SD = 11.2).

4.1.1 Reciprocal items and experiment validation.

4.1.1.1 Reciprocal design. In chapter 3, the predictions established that the experiment design was considered successful if the results showed a significant effect of Context (Topic EH) x Subject [of the target sentence] (Person EH). A 2 x 2 ANOVA of

Context (Null, Priming) x Subject (First Person, Third Person), with mean acceptability rating as the dependent variable, showed a main effect of Subject. Target sentences with First Person subjects ($M = 3.53$, $SE = .063$) were rated higher than with Third person subjects ($M = 2.68$, $SE = .107$), $F(1, 33) = 62.21$, $MSE = .391$, $p < .001$, $\eta_p^2 = .65$. There was

Figure 4.1: Mean Ratings, Reciprocal Items

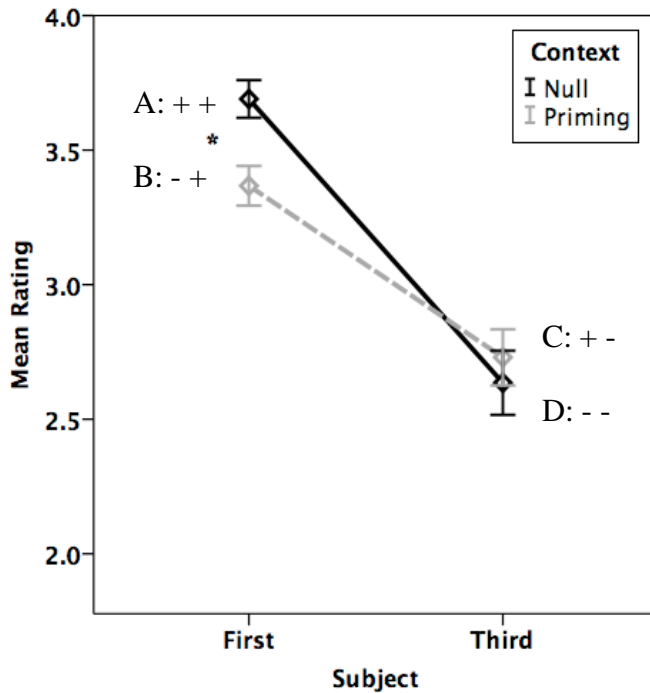


Figure 4.1. Acceptability ratings for First Person versus Third Person grammatical subjects in Null or Priming contexts. Error bars represent +/- 1 SE.

Points ABCD correspond to stimuli in which: A- both EHs observed (++); D-both EHs violated (- -); B-Topic EH violated, Person EH observed (-+); C- Topic EH observed, Person EH violated (+-).

also a main effect of Context, with the Null context ($M = 3.16$, $SE = .078$) rated higher than the Priming context, ($M = 3.05$, $SE = .068$), $F(1, 33) = 7.72$, $MSE = .057$, $p = .009$, $\eta_p^2 = .19$. The critical Context x Subject interaction was significant, $F(1, 33) = 16.11$, $MSE = .092$, $p < .001$, $\eta_p^2 = .33$ (*Figure 4.1*). This validated the design by showing that it successfully implemented the intended rating order of the defining conditions (i.e., the four stimulus types), such that $A > \{B, C, D\}$ and $\{A, B, C\} > D$. Below, example sentences with reciprocal verbs for each of the defining conditions are listed in *Table 4.1*.

Table 4.1: Sample Reciprocal Sentences for the Defining Conditions

Defining Condition	Context	Target sentence	Violations T P
A	Guess what happened this morning?	I fought Matt.	++
B	Matt can be such a bully. This morning,	I fought Matt.	- +
C	Matt can be such a bully. This morning,	Matt fought me.	+ -
D	Guess what happened this morning?	Matt fought me.	--

Table 4.1. The four defining conditions (A, B, C, D) for the Reciprocal group with example contexts and target sentences, and indication of the Topic and Person Hierarchy observation (+) or violation (-).

4.1.1.2. Defining conditions.

The results for the defining conditions are summarized in *Table 4.2* and *Table 4.3*. First, *Table 4.2* provides mean ratings for the Reciprocal items and their correlations with EQ. The t-tests showed that all the defining conditions (A, B, C and D) were significantly different from zero. In this table, as in all tables that follow, a cell is highlighted when the datum therein is statistically significant. Paired-samples t-tests also showed that in the Priming context, target sentences with First person subjects (condition B) had significantly higher ratings than target sentences with Third person subjects (condition C). *Table 4.3* contains the measures of the differences between the defining conditions. The second column in *Table 4.3* lists the meaning of the

Table 4.2: Mean Ratings and Correlations, Reciprocal Items

Defining Conditions	Mean Rating	Correlations with EQ	
		r	p
A	3.69	0.268	0.137
B	3.37	0.156	0.395
C	2.73	-0.35	0.05
D	2.64	-0.496	0.004

Table 4.2. Mean ratings for the defining conditions (ABCD) of the Reciprocal sentences and their correlations with EQ.

difference measures in terms of the conditions of the two hierarchies that are being assessed. For example, A-B is the same as A: (T+ P+) – B: (T- P+). Thus, this shows the difference between T+ and T- when P+ remains constant, written as T_{P+} . Of the difference measures, there was a significant effect (i.e., greater than zero) for A-D, A-C, and A-B. Taken together, these data validate the defining conditions. C-D showed only a trend towards significance, thus, the prediction of a significant difference was not supported. There was no prediction about B-C, yet the data showed that B was significantly higher than C, suggesting that the violations of the Person EH impacted the participants to a greater extent than the violations of the Topic EH in this experiment design ($t = 5.232$, $p < 0.001$) when there was an explicit entity that was topicalized, and the target sentence contained a default topic.

Table 4.3: Mean Ratings and Correlations, Reciprocal Difference Measures

Design	Empathy Hierarchy	Mean Rating	t-test		Correlation with EQ	
			t	p	r	p
A - D	$(T_{\Sigma} + P_{\Sigma}) / 2$	1.081	8.908	< 0.001	0.647	<.001
A - B	T_{P+}	0.329	4.607	< 0.001	0.11	0.548
C - D	T_{P-}	0.095	1.392	0.174	0.335	0.061
B - C	$(T- P+) - (T+P-)$	0.657	5.232	< 0.001	0.38	0.032
A - C	P_{T+}	0.986	9.269	< 0.001	0.523	0.002
B - D	P_{T-}	0.753	5.777	< 0.001	0.542	0.001

Table 4.3. Mean difference measures in the defining conditions (A, B, C, D) for the Reciprocal sentences, t-tests and correlations with EQ. The Empathy Hierarchies that correspond with the difference measures are listed.

4.1.1.3 Linguistic Empathy sensitivity and correlations with Psychological Empathy (EQ). There was a prediction that stated that A-D would be the crudest measure of

sensitivity to Linguistic Empathy, and that a person's sensitivity to Linguistic Empathy should be related to Psychological Empathy (EQ) by a significant negative correlation between the differences of ratings of A-D and the EQ of the participant. To demonstrate this, EQ was correlated with the four defining conditions (A, B, C and D, *Table 4.2*) as well as with the four differences between these conditions (A-D, A-B, C-D as well as B-C, *Table 4.3*).

Among the defining conditions, only C and D showed significant correlations with EQ. Among the difference measures, A-B did not show a significant correlation with EQ ($r = 0.11$, $p = 0.548$) and the correlation of C-D with EQ missed significance ($r = 0.335$, $p = 0.061$). A-D and A-C showed significant correlations with EQ (i.e., both exhibited differences between conditions when the Person EH was observed and violated). Furthermore, A-D (i.e., difference between the conditions when both EHs are observed and when both EHs are violated) showed the highest correlation with EQ ($r = 0.647$, $p = <0.001$). A-C does not involve a violation of the Topic EH, but it does involve a difference between observing and violating the Person EH. In other words, A-C measures the Person EH (P+ minus P-) in conditions when the Topic EH is observed (T+). Note that C is smaller or equal to D, and therefore A-C is smaller than A-D. Thus, A-D is the largest and presumably the best measure of the two empathy hierarchies. In other words, A-C measures the Person EH (P+ minus P-) in conditions when the Topic EH is observed (T+) since both A and C observe it. Since A-D accommodates a greater violation of Linguistic Empathy, it is a more accurate and more sensitive measure of Linguistic Empathy than A - C, and consequently it should and did correlate more significantly with EQ. Similarly, the correlation of EQ with A-D was also higher than the correlation for D alone ($r = 0.496$, p), confirming the prediction that the difference measure A-D is a more accurate and sensitive measure of Linguistic Empathy than D.

The difference between the Topic EH and Person EH, B-C, was described as a promising measure of the asymmetry between the two hierarchies. The results showed that B-C was significantly different from chance, suggesting that the Person EH was stronger than the Topic EH in this design. The results also showed that A-B (i.e., T_{P+} : difference in Topic EH violation when Person EH is observed) is always larger than C-D (i.e., T_{P-} : difference in Topic EH when Person EH is violated).

Taken together, the correlation data suggest that A-D is the most promising measure of a person's sensitivity to Linguistic Empathy, combining violations of the Topic and Person EHs. As expected, the correlations with EQ were largest for terms that include violations of both EHs (difference measure A-D) rather than violations of only the Person EH (difference measure A-C), as shown in *Figure 4.2*.

Figure 4.2: Correlations of EQ and Linguistic Empathy, Reciprocal Sentences

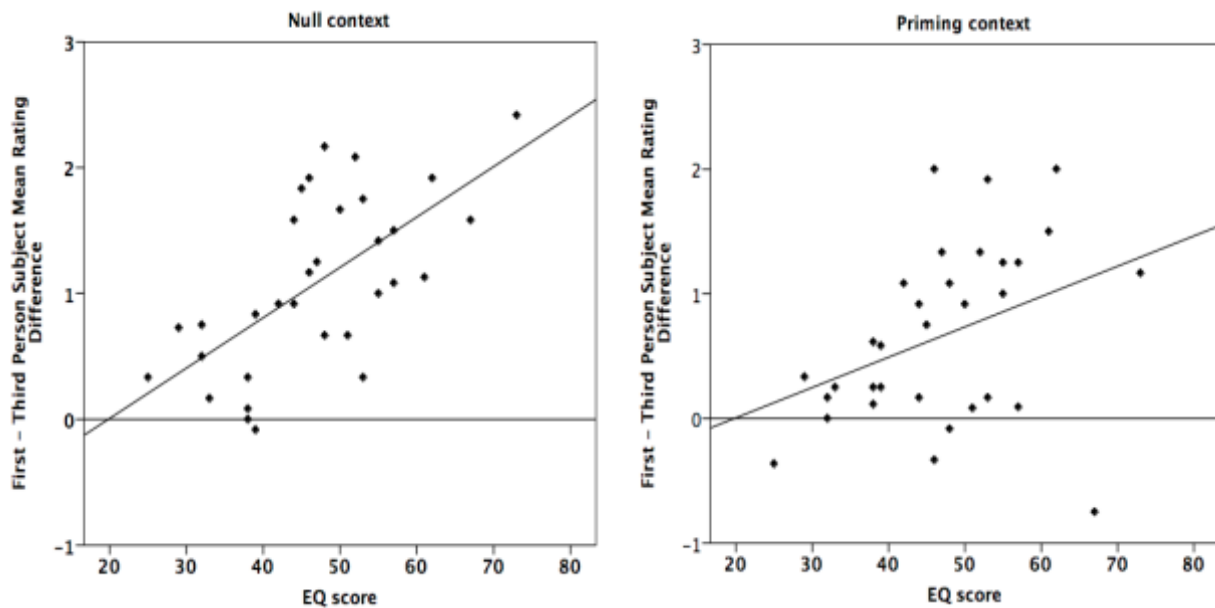


Figure 4.2. Correlation between EQ score and sensitivity to Linguistic Empathy when determining acceptability for reciprocal sentences, with Null context (A - D, left), or Priming context (A - C, right). Both correlations are significant, but A - D

demonstrates a greater correlation.

4.1.2 Active/Passive items and experiment validation.⁶

4.1.2.1. Active/Passive design.

The experiment design was considered successful if the results showed a significant effect of Context (Topic EH) x Structure [Active versus Passive] (Person EH). The results for the Active/Passive items were analyzed using the same procedure that was used for the Reciprocal items. A 2 x 2 ANOVA of Context (Null, Priming) x Structure (Active: First person subject, Passive: Third Person subject) revealed a main effect of Structure, where Active sentences ($M = 3.48$, $SE = .077$) were rated higher than Passive sentences ($M = 2.44$, $SE =$

Figure 4.3: Mean Ratings, Active/Passive Items

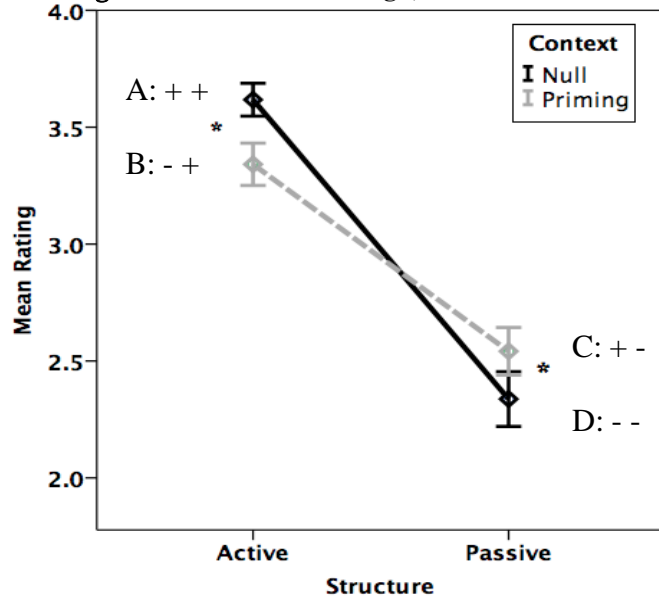


Figure 4.3. Mean acceptability rating for Active/Passive sentences with Active (first person subject) versus Passive (third person subject) sentences in Null or Priming contexts. Error bars represent +/- 1 SE. Points ABCD correspond to stimuli in which: A-both EHs observed (++); D-both EHs violated (--); B-Topic EH violated, Person EH observed (+-); C-Topic EH observed, Person EH violated (-+).

⁶ Sentences in this group are referred to as Active and Passive to avoid confusion with the corresponding variable in the Reciprocal group. The “Actives” in this group have first person grammatical subjects, and the “Passives” have third person grammatical subjects, but the “First person” and “Third person labels were reserved for the Reciprocals.

.102), $F(1, 33) = 83.93$, $MSE = .44$, $p < .001$, $\eta_p^2 = .74$. The main effect of Context was not significant, $F(1, 33) < 1$. The critical interaction of Context x Structure was significant, $F(1, 33) = 20.62$, $MSE = .095$, $p < .001$, $\eta_p^2 = .39$. Follow-up comparisons showed that Active sentences ($M = 3.62$, $SE = .070$) were rated as more acceptable than Passive sentences in the Null context ($M = 2.34$, $SE = .117$), $t(33) = 10.01$, $p < .001$, as well as in the Priming context (Active: $M = 3.34$, $SE = .090$, Passive: $M = 2.54$, $SE = .102$), $t(33) = 6.53$, $p < .001$. These data are displayed in *Figure 4.3*.

The interaction indicated that the effect of Structure in the Null context was stronger than in the Priming context. There was a significant effect of Context in the Active sentences (First person subjects), $t(33) = 5.39$, $p < .001$, where ratings were higher in the Null context (A) than in the Priming context (B). Passive sentences (Third person subjects) showed the opposite pattern, which was predicted: the ratings were significantly higher in the Priming context (C) than in the Null context (D), $t(33) = 2.55$, $p = .015$. This validated the design by showing that it successfully implemented the intended rating order of the

Table 4.4: Sample Active/Passive Sentences for Defining Conditions

Defining Condition	Context	Target sentence	Violations T P
A	Good to see you. Can I tell you about what happened last night?	I massaged Sue.	+ +
B	Sue and Dan have had quite a busy day. Dan got a haircut, and	I massaged Sue.	- +
C	Sue and Dan have had quite a busy day. Dan got a haircut, and	Sue was massaged by me.	+ -
D	Good to see you. Can I tell you about what happened last night?	Sue was massaged by me.	- -

Table 4.4. The four defining conditions (A, B, C, D) for the Active/Passive group with example contexts and target sentences, and indication of the Topic and Person Hierarchy observation (+) or violation (-).

experimental conditions, i.e., $A > \{B, C, D\}$ and $\{A, B, C\} > D$. Example sentences for each of the defining conditions are listed in *Table 4.4*.

4.1.2.2. Defining

conditions. The results for the follow-up tests are summarized in *Tables 4.5* and *4.6*. First, *Table 4.5* provides the mean ratings for the defining conditions (A, B, C and D), and the t-tests showed that all the defining conditions were

Table 4.5: Mean Ratings and Correlations, Active/Passive Items

Defining Conditions	Mean Ratings	Correlations with EQ	
		r	p
A	3.62	0.116	0.527
B	3.34	0.004	0.985
C	2.54	-0.169	0.356
D	2.34	-0.371	0.037

Table 4.5. Mean ratings for the defining conditions (A, B, C, D) of the Active/Passive sentences and their correlations with EQ.

Table 4.6: Mean Ratings and Correlations, Active/Passive Difference Measures

Design	Empathy Hierarchy	Mean Rating	t-test		Correlation with EQ	
			t	p	r	p
A - D	$(T_{\Sigma} + P_{\Sigma}) / 2$	1.261	9.79	< 0.001	0.408	0.02
A - B	T_{P+}	0.281	5.234	< 0.001	0.153	0.404
C - D	T_{P-}	0.196	2.322	0.027	0.314	0.08
B - C	$(T_{-} P_{+}) - (T_{+} P_{-})$	0.785	6.15	< 0.001	0.14	0.445
A - C	P_{T+}	1.065	9.786	< 0.001	0.239	0.187
B - D	P_{T-}	-0.981	7.179	< 0.001	0.325	0.07

Table 4.6. Mean difference measures in the defining conditions (ABCD) for the Active/Passive sentences, t-tests and correlations with EQ. The Empathy Hierarchies that correspond with the difference measures are listed.

significantly different from zero. *Table 4.6* provides the difference measures, and demonstrates that there was a significant effect (i.e., greater than zero) for all difference measures. Paired-samples t-tests also showed that in the Priming context, Active target sentences (B) had significantly higher ratings than Passive target sentences (C). This difference between the Topic EH and Person EH, B-C, was described as a promising measure of the asymmetry between the two hierarchies, and it suggests that the violations of the Person EH impacted the participant greater than violations of the Topic EH in this experiment design ($t = 6.15, p < 0.001$). The results also showed that A-B is always larger than C-D.

4.1.2.3 Linguistic Empathy sensitivity and correlations with Psychological Empathy (EQ). As with the Reciprocal group, the predictions stated that A-D in the Active/Passive group would be the best measure of sensitivity to Linguistic Empathy, and that a person's sensitivity to Linguistic Empathy should be related to Psychological Empathy (EQ). To investigate the validity of this prediction, EQ was first correlated with the four defining conditions (A, B, C and D, *Table 4.5*), with the four differences between these conditions (A-D, A-B, C-D and B-C, *Table 4.6*). Of the four defining conditions, only the acceptability ratings for Passive items in the Null context (D) correlated significantly (and negatively) with EQ score. Of the differences in these conditions, only A-D showed a significant correlation with EQ (*Table 4.6*).

The correlations with EQ for the individual defining conditions are shown in *Table 4.4*, and the correlations with EQ for the difference measures are shown in *Table 4.6*. Among the defining conditions, only D showed significant correlations with EQ. Among the difference measures, A-B did not show a significant correlation with EQ ($r = 0.153, p = 0.404$), and the correlation of C-D with EQ missed significance ($r = 0.314, p = 0.08$), and B-C

did not show a significant correlation ($r = 0.14$, $p = 0.445$). In fact, A-D was the only difference to show significant correlations with EQ ($r = 0.408$, $p = 0.02$). The correlation of EQ with A-D was also higher than the correlation for D alone ($r = -0.371$, $p = 0.037$), confirming the prediction that the difference measure A-D was a more accurate reflection of sensitivity to Linguistic Empathy than the absolute measure, D.

As with the Reciprocal group, the correlation data suggest that A-D is the most promising measure of a person's sensitivity to Linguistic Empathy. This measure combines the violations of the Topic and Person EHs (condition D), and compares them with corresponding stimuli with no EH violation. As expected, the correlations with EQ were largest for terms that include violations of both the Topic EH and the Person EH (difference measure A-D) rather than violations of only the Person EH (difference measure A-C), as shown in *Figure 4.4*.

Figure 4.4: Correlation of EQ and Linguistic Empathy, Active/Passive Sentences

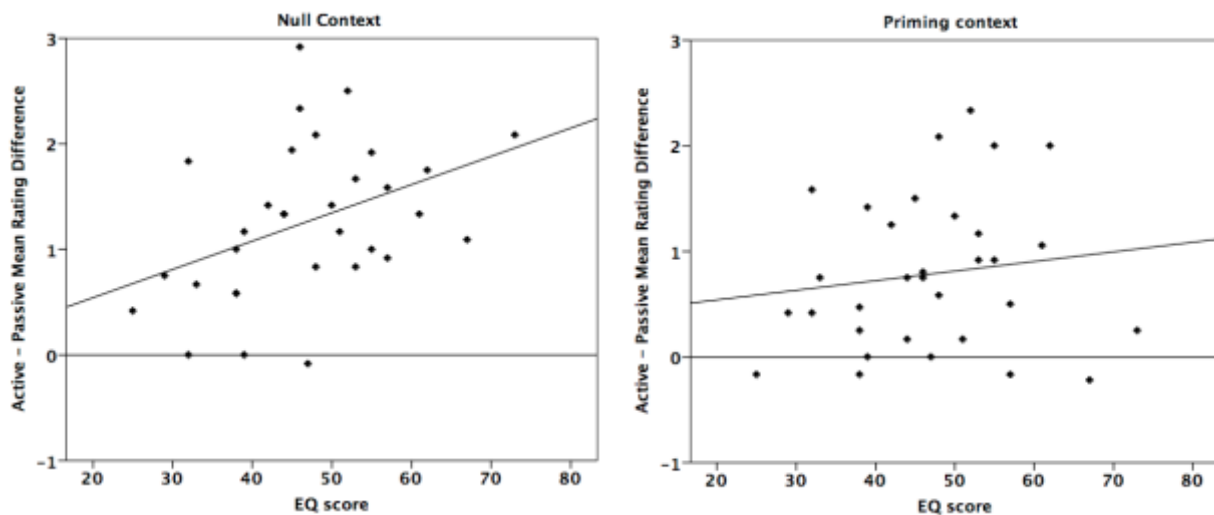


Figure 4.4. Correlation between EQ and Linguistic Empathy for Active/Passive sentences, with the Null context (A-D, left, significant), and the Priming context (A-C, right, not significant).

4.1.3 Comparison across sentence types. Finally, the correlation was examined for each of the defining conditions and the difference measures of Linguistic Empathy for the Reciprocal and Active/Passive item groups together. The correlation between A-D in the Reciprocals and A-D in the Active/Passive was highly significant, $r = 0.71$, $p < .001$. The correlation of B-C in the two type of sentences was also a significant but smaller, $r = 0.51$, $p = .003$. A Fisher's Z test showed that the correlation coefficients for A-D and B-C did not differ significantly from each other, $z = 1.22$, $p = 0.22$. More generally, all the difference measures that were analyzed (see *Table 4.3* and *Table 4.6*) correlated significantly across the two sentence types, but they did not correlate significantly with each other within each sentence type. The pattern of the results demonstrated that a measure of Linguistic Empathy in the Reciprocal item group correlated significantly with the same measure in the Active/Passive item group.

In comparing respective ratings for the Active/Passive stimuli with the Reciprocal stimuli, inspection of *Figure 4.2* and *Figure 4.4* suggests that the ratings for points C and D were lower in the Active/Passive sentences than for the Reciprocal sentences, whereas the ratings for points A and B were similarly high for the Reciprocal and Active/Passive sentences. More formally, condition D was significantly lower in the Active/Passive than in the Reciprocal sentences, $t(33) = 3.45$, $p = .002$. Point C was almost significantly lower in the Active/Passive than in the Reciprocal sentences, $t(33) = 1.89$, $p = .068$. By contrast, the difference in mean ratings for the two types of sentences was not significant for either point A ($t(33) = 1.36$, $p = .183$) or point B ($t(33) < 1$).

4.2 Discussion

4.2.1 Defining Conditions. The findings confirm that comparisons across acceptability ratings yield valid and stable measures of sensitivity to violations in Linguistic Empathy. The results found that for both Reciprocal and Active/Passive groups, with first person subjects in a null context (condition A: *Guess what happened this morning? I fought Matt.*) were rated higher than sentences with third person subjects (condition D: *Guess what happened this morning? Matt fought me.*), as was predicted by the combined effect of violations to the Person EH and the Topic EH. In the priming context, the sentences with first person grammatical subjects (condition B: *Matt can be such a bully. This morning, I fought Matt*) were less acceptable than in the null contexts (condition A). The sentences with third person grammatical subjects were more acceptable in priming contexts (condition C: *Matt can be such a bully. This morning, Matt fought me.*) than in the null contexts (condition D). Thus, the acceptability ratings confirmed the predictions that $A > \{B, C, D\}$ and $\{A, B, C\} > D$. These ratings also validated the principles stipulated in Kuno and Kaburaki (1977) and Kuno (1987) regarding the role of the two EHs in sentence acceptability. In other words, when there is a conflict in the Empathy relations between the Person EH and the Surface Structure EH, the Topic EH and the Surface Structure EH, or both the Person EH and the Topic EH with the Surface Structure EH, sentence acceptability becomes more marginal.

The correlation of the measurements with EQ is more complex. Firstly, let us consider the correlations with defining conditions for both Reciprocal and Active/Passive groups. For sentences that observed the Person EH, no correlation with EQ score was found for null context (condition A: *Guess what happened this morning? I fought Matt.* and *Good to see you. Can I tell you what happened last night? I massaged Sue.*). This finding suggests

that sentences with no EH violation should be deemed acceptable by all participants, regardless of EQ. Next, in sentences that observed the Person EH, correlation with EQ was slightly higher but not significant for the priming context either (condition B: *Matt can be such a bully. This morning, I fought Matt.* and *Sue and Dan have been quite busy today. Dan got a haircut, and I massaged Sue.*). Sentences in which the Person EH was violated were statistically significant in the priming context for the Reciprocals (condition C: *Matt can be such a bully. This morning, Matt fought me.*), but not for the Active/Passives (condition C: *Good to see you. Can I tell you what happened last night? Sue was massaged by me.*). Reciprocals and Active/Passives with third person subjects in the null context displayed the most significance (condition D: *Guess what happened this morning? Matt fought me.*). These findings suggest that as the stimuli increase in violations, they gradually become judged as more unacceptable by people with higher EQ.

4.2.2 Difference Measures. For the Reciprocal items in both null and priming contexts, the mean acceptability ratings correlated negatively with EQ score for the target sentences with third person grammatical subjects. These correlations were strongest in the differences between ratings of conditions A (*Guess what happened this morning? I fought Matt.*) and D (*Guess what happened this morning? Matt fought me.*). Correlations were also significant between conditions A and C (*Matt can be such a bully. This morning, Matt fought me.*), though less than A-D. The correlations demonstrated that the higher the EQ measure is in a participant, then the more sensitive that person is to Linguistic Empathy violations of both the Person EH and Topic EH. This matched the expectation that a correlation with EQ would be most significant in sentences with a more violations of Linguistic Empathy. In other words, a higher EQ score correlates with a larger discrepancy between ratings of sentences that observe and sentences that violate the EHs. The lower

the EQ is for the participant, the less sensitive the participant is to violations of the Person EH and Topic EH together (condition D: *Guess what happened this morning? Matt fought me.*). This sensitivity to violations is less powerful but remains significant when the Topic EH was observed in priming contexts (condition C: *Matt can be such a bully. This morning, Matt fought me.*). The fact that the correlation is less significant when only one EH is violated confirms that violating multiple hierarchies is additive: the violations compile to make an utterance sound less acceptable. This also indicates that violations of the Person EH in this design affect participants with higher EQ regardless of the type of context sentence, and comparatively, violations of the Person EH have less of an effect on participants with lower EQ.

For the Active/Passive items, the mean acceptability ratings correlated negatively with EQ score for the passive sentences only in the null context. This correlation was the difference between the ratings of conditions A (*Good to see you. Can I tell you what happened last night? I massaged Sue.*) and D (*Good to see you. Can I tell you about what happened last night? Sue was massaged by me.*). The implication must be the same as with the Reciprocal items: the lower the EQ is for a particular participant, the more inclined that person is to ignore violations of the Person EH in Null contexts. However, there was no significant correlation between EQ score and ratings of stimuli that violated the Person EH and observed the Topic EH (i.e., difference between condition A: *Good to see you. Can I tell you about what happened last night? I massaged Sue.* and condition C: *Sue and Dan have been quite busy today. Dan got a haircut, and Sue was massaged by me.*). The lack of significant correlation with EQ score indicates that the observation (*I massaged Sue.*) or violation (*Sue was massaged by me.*) of the Person EH in the Active/Passive items overrode the effect of the Topic EH for all participants despite EQ. This can be interpreted either as participants with lower EQ scores are relatively less sensitive to violations of the Person

EH and more sensitive to violations of the Topic EH in the Reciprocal items versus the Active/Passive items, or as participants with higher EQ scores are less sensitive to the effects of Topic EH in the Active/Passive items. In either case, the interactive effects of both Linguistic EHs that correlated across Reciprocal and Active/Passive item groups support the hypothesis that sensitivity to Linguistic Empathy violations is related to Psychological Empathy.

4.2.3 Linguistic Empathy measure. I argue that the specific rating of a marginal sentence is not as important as the difference between how this sentence sounds compared to a felicitous sentence. For instance, if a person rates sentences with EH violations as a 1 out of 4, and rates sentences with no violations as a 3 out of 4, then this person seems to be affected by the EHs to the same extent as a person who rates sentences with EH violations as a 2 out of 4, and rates sentences with no violations as a 4 out of 4. Since the difference is 2 in both instances, these raters are influenced by the effects of EH violation to the same degree. However, if the measure of Linguistic Empathy sensitivity were recorded by an individual's rating of sentences with EH violations without such a comparison, this distinction would be lost. Indeed, the results demonstrated that EQ was correlated more strongly with the difference of A-D than with D alone (A: *Guess what happened this morning? I fought Matt* versus D: *Guess what happened this morning? Matt fought me.*). This supports the claim that a difference between two defining conditions is a more accurate measure of EQ than a proposed fixed value at a single point.

If a valid measure of Linguistic Empathy sensitivity is required to be positively correlating with EQ, then the three difference measures A-D (A: *Guess what happened this morning? I fought Matt*. minus D: *Guess what happened this morning? Matt fought me.*), A-C (A: *Guess what happened this morning? I fought Matt*. minus C: *Matt can be such a*

bully. This morning, Matt fought me.), and B-D (B: *Matt can be such a bully. This morning, I fought Matt.* minus D: *Guess what happened this morning? Matt fought me.*) are valid candidates as measures of sensitivity to Linguistic Empathy because there is an imbalance in the amount of EH violation. However, since A-C and B-D only contain the violation of a singular EH, these differences measures are less likely candidates. Further, if a difference measure that has the highest correlation with EQ is assumed to be the best estimate of sensitivity to Linguistic Empathy, then A-D (A: *Guess what happened this morning? I fought Matt.* versus D: *Guess what happened this morning? Matt fought me.*) is clearly the preferred measure, at least when contrasting the Topic and the Person EHs under the restricted conditions specified by the experimental design. Indeed, this difference is also the crudest in that it demonstrates the difference between observing both EHs and violating both EHs. The significant correlation between Linguistic Empathy sensitivity and EQ is consistent with the view that Linguistic Empathy sensitivity is a meaningful individual difference.

4.2.4 Implications for the Linguistic Empathy Hierarchies. Difference in the relative strength of the Topic EH vis à vis the Person EH has been found among different languages. In this experiment the Person EH overrode the Topic EH (witness that cases like *Matt can be such a bully. This morning, I fought Matt* were rated better than *Matt can be such a bully. This morning, Matt fought me.*), although strong heavy contextual priming can significantly improve the acceptability of sentences that violate the Person EH (e.g., *Guess what, big news! Remember Basil, the guy I met last summer in England, that cool handsome aristocrat? Well, Basil is marrying me!*). Nevertheless, in the null context, odd English sentences like *Sue was massaged by me* are still considered grammatical. In Lummi (a Native American language), however, *He was hit by me* (although structurally

equivalent to *Sue was massaged by me*) is judged to be ungrammatical (Oshima, 2007a, p. 757). Evidently, in this language the Person EH is stronger than the Topic EH, and Empathy Hierarchies have the status of grammatical rules. Considering the varying status of Linguistic Empathy among the languages of the world, the results obtained from the participants with lower EQ in this experiment are by no means impossible.

The investigation of which stimulus type demonstrated the best measure of the Topic EH is intricate. Across both Reciprocal and Active/Passive item groups, the difference of A-B (A: *Guess what happened this morning? I fought Matt.* versus B: *Matt can be such a bully. This morning, I fought Matt.*) is not equal to the difference of C-D (C: *Matt can be such a bully. This morning, Matt fought me.* versus D: *Guess what happened this morning? Matt fought me.*). The comparison of the EH values is as follows: $A-B = (T+ P+) - (T- P+)$, and $C-D = (T+ P-) - (T- P-)$. These differences represent comparisons of when the Person EH remained constant (P+ & P+ or P- & P-) while the status of the Topic EH changed from observed to violated. Thus, in these differences, the Topic EH is the only EH whose status changes. The difference in the status of the Topic EH was larger in A-B (A: *Guess what happened this morning? I fought Matt.* versus B: *Matt can be such a bully. This morning, I fought Matt.*) than in C-D (C: *Matt can be such a bully. This morning, Matt fought me.* versus D: *Guess what happened this morning? Matt fought me.*). This suggests that the violation of the Topic EH when the Person EH is observed (condition B: *Matt can be such a bully. This morning, I fought Matt.*) made the violation of the Topic EH more obvious to the rater; contrarily, a violation of the Topic EH when the Person EH is also violated (D: *Guess what happened this morning? Matt fought me.*) made the violation of the Topic EH less obvious. In effect, this demonstrated that violation of the Person EH influenced the ratings more than violation of Topic EH.

Another factor that could contribute to the imbalance between the effects of the Topic EH is that the violations at point B (*Matt can be such a bully. This morning, I fought Matt.*) and point D (*Guess what happened this morning? Matt fought me.*) are not equivalent, strictly speaking. The violation of the Topic EH at point B involves competition between eligible topics: *Matt* is mentioned in the context, *I* is part of mutual current concern (but not verbalized), and *I* is used as topic of the target sentence. Contrarily, there is only one eligible topic in the violation at point D: *I* is part of mutual current concern, *Matt* is not mentioned in the preceding context, and yet *Matt* is used as the sentential topic of the target sentence. Despite this imbalance between violations to the Topic EH, the influence that the Person EH exerted on the participants was also supported by the result that point B (*Matt can be such a bully. This morning, I fought Matt.*) was rated significantly higher than point C (*Matt can be such a bully. This morning, Matt fought me.*). This showed that the violation of the Person EH negatively affected the ratings more than both types of Topic EH violation.

This study supports the validity of the effect of the two Empathy Hierarchies on the acceptability of the sentences studied. Given the contested status of subtle acceptability judgements of this type of data in linguistic studies, this conclusion provides important support for notions of Linguistic Empathy. The study also confirmed the hypothesis that Linguistic Empathy is related to Psychological Empathy, suggesting a common underlying component is at work when processing Empathy related phenomena. Psychological Empathy measures indicate individual differences with respect to processing Empathy, and they can be acquired through both behavioral and neuro-physiological methods. The correlations suggest that Linguistic Empathy measures should reflect similar individual differences in processing Empathy, and that these differences should be measurable in both behavioral and electrophysiological terms. Furthermore, these results indicate that the

capacity to notice violations of Linguistic Empathy differs among individuals. If individuals vary in their ability to notice linguistic violations, this indicates a fundamental difference exists in individual linguistic competence.

4.3 Limitations and Extensions

A speaker's Empathy can find expression in many features of an utterance, including the choice of referential expressions, verbs, conjunctions, intonation, and syntactic constructions. In natural language, these features rarely operate in isolation but co-occur in the same utterance. Stripping the sentences to bare minimum to satisfy the technical requirements of an experiment seriously affects their processing by the native speaker and the acceptability ratings. Given the necessarily crude target sentences, it is striking that patterns were still discernable. A richer, more natural target sentences will hopefully be testable in the future. Additionally, the rating system is explicit and self-conscious. A more automatic or implicit measure would be preferred. It is likely that different participants have different criteria for acceptability, be they grammatical, semantic or pragmatic. The experiments discussed here demonstrated a correlation between Psychological Empathy and at least the criterion of sentence acceptability caused by the manipulation of the Empathy Hierarchies. What other factors correlated with or affect other linguistic features of sentences remains to be seen.

The visual form of the stimuli creates another principled limitation. Studies (e.g., Ayers, 1994; Bader, 1998) have shown that prosody influences the way a person interprets language when reading silently. This means that language stimuli in psycholinguistic experiments that have multiple possible prosodic possibilities (e.g., syntactic ambiguity, varying stress patterns, etc.) can be interpreted differently depending on a person's chosen prosody and intonation. In the present experiment, in the null context, when *I fought Matt*

is preceded by *Guess what happened this morning?*, then *Matt* can be fully accented. When the same target sentence *I fought Matt* is preceded by the prime *Let me tell you about Matt*, on the other hand, *Matt* would normally be deaccented (weakly stressed), otherwise its acceptability is seriously diminished. A more natural version would be to use a pronoun to refer to the *Matt* in the second sentence: *Let me tell you about Matt. I fought him*. When participants are presented with visual stimuli, the experimenter has no control over what accentual pattern the participants posit in each case. This potentially contaminates the results with acceptability judgments that are influenced by presupposed wrong intonation. This obstacle can be removed by presenting the participants with auditory stimuli, but this would be another experiment. Nevertheless, patterns were still discernable despite this accentual ambiguity of the stimuli.

Apart from these limitations with the experiment design, there were limitations in the scope of the data, of which two are important and can be addressed in the future without changing the experiment setup. Firstly, this experiment compared Active/Passive pairs with first person agents and third person patients only (e.g., *I massaged Sue* versus *Sue was massaged by me*). When these roles are maintained across the Active and Passive forms, only the syntactic categories subject and object shift. Extensions of this experiment should include Active/Passive pairs where the agent and patient roles are reversed (e.g., *Sue massaged me* vs. *I was massaged by Sue*). Passives in such cases do not violate the Person EH, and therefore they are expected to yield higher acceptability ratings than the Passives used in this experiment. Sentences with agent and patient both in third person (*Kate coached Sean* vs. *Sean was coached by Kate*) would present yet additional interesting variables.

An obvious extension to this experiment would be to consider other EHs and their linguistic manifestation. This experiment demonstrated that specific EHs can be analyzed

systematically independently from the others. In this experiment, the relationship among three specific hierarchies was analyzed: Person EH and Topic EH were manipulated to conflict with the Surface Structure EH. However, Linguistic Empathy is manifested in many other forms, and the ultimate goal is to describe a general model for Empathy that includes all known (and undiscovered) manifestations, as well as their interactions with Psychological Empathy. One can then proceed with introducing one or two new Linguistic Empathy phenomena at a time and analyze their interactions with each other and with the first set. Correlation with Psychological Empathy and the subjects' reactions to sentences or contexts with socially inappropriate or socially unexpected meanings could be another avenue for exploring Empathy relations.

Finally, since EQ tests are often used as a screening tool for Psychological Empathy deficits such as Autism Spectrum Disorder, the correlation yielded between EQ measurements and Linguistic Empathy suggests that a measure of Linguistic Empathy could be developed into a similar diagnostic or therapeutic tool for Empathy deficits or training the affected population. Compared to existing self-report questionnaires that measure EQ, linguistic tools of the sort used in this experiment would be unencumbered by self-conscious biases. The results from this experiment indicate that through further experimentation, sentential stimuli could be developed for a test that can be used as a diagnostic tool for Psychological Empathy deficiencies. Additionally, once a unified model for Linguistic and Psychological Empathy is developed, it could have applications for children's socialization, language acquisition, and clinical treatments for Empathy deficits.

CHAPTER 5

CONCLUSIONS

This chapter extends the implications of the experimental results from the previous chapter. If the aim of the previous chapter was to confirm and discuss experimental predictions, then the goal of this chapter is to reintegrate this discussion into linguistic and psychological contexts. In doing so, the contributions from this dissertation and proposed extensions to this dissertation are presented. A first contribution involves the implications of the methodological approach. The experimental methodology in this study provides an opportunity not only to investigate the linguistic phenomena, but also to apply these data to the experimental participants. In doing so, these methods reimagine the role of grammatical judgments in order to test for patterns and systems that may emerge with respect to individual differences among participants. A second contribution is the confirmation of Linguistic Empathy as a measurable trait in individuals. This measure proved to be correlated with a person's Psychological Empathy score, as measured by Empathy Quotient (EQ). This correlation marks a third major contribution, and this chapter explores the overlap between Linguistic and Psychological Empathy notions. Further experimentation that builds upon these results are discussed, which includes the incorporation of electrophysiological methods. Finally, the notion of an underlying Empathy component is explored.

5.1 Methodological Contributions

In undertaking an investigation into Linguistic Empathy, this dissertation's primary intention was to confirm the effects of linguistic phenomena in Linguistic Empathy and to uncover novel contributions and extensions to the understanding of Linguistic and

Psychological Empathy. In pursuing this research, this study utilized and provided significant methodological contributions toward future studies. As discussed in chapter 3, this paper investigates Empathy not through additions to previous approaches, but through a novel methodological approach. More specifically, this dissertation's experiment attempts to validate notions of Linguistic Empathy by presenting sentences with established phenomena to a range of native speakers in order to observe and analyze trends in their responses. Analyses were then applied to the sentences to confirm the linguistic effects, and they were also applied to the participants themselves to measure significant individual differences in those who rated the sentences. The variation of linguistic judgments in this experiment reflected significant phenomena in both the individuals who participated as well as the linguistic stimuli. The patterns that emerged from how a person rated the sentences turned out to reflect an individual measure of Linguistic Empathy. Additionally, the systematic way that people rated sentences helped to confirm the underlying principles of Linguistic Empathy that were manipulated in the experiment.

The methods in this study and the results of the experiment present a challenge to linguists to reconsider the process of grammatical judgment by providing a new perspective for linguistic research. A traditional approach for a linguist is to engender sentences that highlight phenomena that are contradictory or unexplained by the current understandings of linguistic rules. The linguist then uses native speaker informants or her/his own expertise to determine the felicitousness of the sentence. However, although this method may be useful for introducing novel phenomena, this method falls short of providing a thorough account of phenomena with marginal acceptability. The most significant evidence of this effect is that Linguistic Empathy has been demonstrated to extend into systematic individual differences in linguistic competence.

Linguists who investigate Empathy have done so by providing sentences with phenomena that defy syntactic explanation and fit into the theory of Linguistic Empathy. Many of the rules of Linguistic Empathy that emerged were based on counterexamples in which the syntax of the sentences could not explain the difference in felicitousness. For instance, examples like *I fought Matt* versus *Matt fought me*, where the felicitousness of these sentences is clearly not equivalent but the syntax is identical, required explanation. Thus, rules like Kuno's EHs were established to explain these phenomena. However, this dissertation has shown that standard methodology falls short of fully explaining the behavior of sentence acceptability. When someone rates a sentence's acceptability, this judgment may not hold true for all native speakers. Previously, this variability in acceptability across native speakers was acknowledged, but it was attributed to a person's individual idiolect instead of hypothesized as a systematic and measurable difference. This paper demonstrates that this approach can provide systematic, significant, and informative results based on acceptability judgments that apply to both the individuals and the linguistic phenomena involved.

This paper is not advocating for the removal of the traditional linguistic approach in which phenomena are highlighted in sample sentences. This method is crucial in providing counterexamples that highlight holes in current theoretical understandings. However, I argue that the benefits of the approach proposed and practiced here are many. Providing language examples that support rules and understandings is crucial to supporting evidence for linguistic phenomena. Similarly, native speakers whose grammatical judgments vary can provide insight to validate the proposed rules, as well as insight into corollary phenomena (e.g., EQ correlation). The experiment in this dissertation shows that variation of grammatical judgment can be relative to individual speakers, and not in an arbitrary way. I argue that this approach must be considered with respect to new and different

Empathy phenomena in language. If this approach confirms systematic variation in individual acceptability with respect to Linguistic Empathy violations, the possibility of similar systematic variation with respect to violations of other linguistic phenomena should be pursued.

5.2 Measure of Linguistic Empathy

The consideration of Linguistic Empathy as an individual trait and the measurement of a person's sensitivity to violations in Linguistic Empathy comprise a novel approach to Empathy. Linguistic Empathy sensitivity measures a person's ability to notice violations of Linguistic Empathy, and it is manifested by this person's tendency to rate these utterances as less acceptable. In other words, when established rules of Linguistic Empathy are violated, a person with greater Linguistic Empathy sensitivity has more capacity to notice the negative effects of Linguistic Empathy violations; contrarily, a person with less Linguistic Empathy sensitivity either has less awareness of these violations, or is less affected by these violations, as evidenced by acceptability judgments. The notion of Linguistic Empathy sensitivity was hypothesized in chapter 3 and supported by the results of the experiment in chapter 4. These results confirmed that Linguistic Empathy sensitivity is measurable and meaningful in individuals. This measure was not tested in the person generating the utterance (i.e., speaker), but rather in the person interpreting/processing the utterance (i.e., hearer).

5.3 Connection Between Linguistic Empathy and Psychological Empathy

This dissertation utilized EQ as an individual measure of Psychological Empathy, and the findings revealed that EQ score provides a stable correlate with the Linguistic Empathy measure. Additionally, this dissertation suggests that measuring Linguistic

Empathy could provide an alternate approach toward developing a valid measure of Psychological Empathy. I argue that instead of continually revising the previous self-reporting surveys that measure Empathy, one can develop a measure that is based on principles of Linguistic Empathy theory. The influence that this correlation imparts on measures of Psychological Empathy are discussed below.

One of the primary criticisms of current Psychological Empathy measures discussed in this dissertation has been that these tests are self-report questionnaires that ask direct questions about a person's prosocial emotional behavior. As reviewed in chapter 3, this sort of questioning engenders a conflict of interest with respect to self-incrimination, social desirability, and emotional contamination. I argue that a method for testing should be explored to measure a person's Psychological Empathy without asking the participant to self-report on socio-emotional issues that are relevant for diagnosing deficits of Empathy. One of the applications of a Psychological Empathy measure is in a clinical setting with individuals who are at risk of conditions that present with a deficit of Empathy, such as Autism Spectrum Disorder, psychopathy, or schizoid personality disorder (Baron-Cohen & Wheelwright, 2004; Smith, 2006; Rogers et al., 2007). In this context, the purpose of Psychological Empathy measures is to screen for an Empathy deficit, but not to diagnose such a condition. A Linguistic Empathy measure that is developed to screen for Empathy deficits would do so without the inherent social desirability conflict such as admitting to negative socio-emotional tendencies. As a screening tool, the measure of Linguistic Empathy would indicate the suitability for further investigation from medical professionals.

As a result of the correlation, the Linguistic Empathy test in its current design could be a strong indicator for a person's Psychological Empathy measure. However, the current design investigates aspects of only three specific Empathy Hierarchies, so there is the capacity to expand the theoretical scope of this test. I argue that with further

experimentation, a refined version of a Linguistic Empathy sensitivity test could be designed as an implicit and accurate indicator of Psychological Empathy. The next step in a revised version of the test that aims to measure Psychological Empathy would contain a different range of Linguistic Empathy violations among the stimuli so that a broader set of Linguistic Empathy violations could be verified and incorporated. If subsequent experiments maintain a significant correlation with EQ and other measures of Psychological Empathy, then this linguistic approach would be a candidate for implicit measure of Psychological Empathy. Additionally, if successful, the role of Linguistic Empathy stimuli developed or integrated into therapeutic tools for individuals with Empathy deficits could be explored.

5.4 Electrophysiological Extensions

In addition to the behavioral effects of Linguistic Empathy that were established in this dissertation, the electrophysiological effects of Empathy can also be pursued. The experiment design from this study lends itself to incorporation of electrophysiology in the test methodology, which would augment the behavioral results with a neural account of reactions to Linguistic Empathy violations, including hemispheric and neuroanatomical implications of Empathy violations. A subsequent study is currently under investigation (Kann et al., in preparation) in which reaction time and electroencephalography (EEG) were collected during the task. In this experiment, the behavioral results were replicated and showed that acceptability ratings correlated significantly with reaction time. This confirmed the validity of the experiment design and the results. As with the acceptability ratings, there was also a positive correlation between reaction time and EQ. This result confirmed that the effect of Linguistic Empathy violations extends beyond acceptability ratings. With respect to the electrophysiology, the EEG record was analyzed into Event

Related Potential (ERP) components. The ERP analysis included a temporal bin analysis between 300-400ms as well as an analysis of the peak amplitude at 370ms for midline electrodes for stimuli that violate the EHs. In this range, the ERP component verified the effect of Linguistic Empathy violations as consistent with other types of linguistic violations (Kaan, 2007). The ERP amplitude model correlated positively with acceptability ratings and negatively with reaction time, but it did not correlate with EQ. The components of acceptability ratings and reaction time provide evidence that Linguistic Empathy shares information processing mechanisms with Psychological Empathy. The experiments also demonstrate that there exists a physiological correlate of Linguistic Empathy.

5.5 Underlying Empathy Processing Component

Developing a more precise understanding of the underlying connection between Linguistic Empathy and Psychological Empathy would benefit the design of a linguistic-based Empathy deficit screening tool. Further behavioral and electrophysiological experimentation is needed to provide evidence toward uncovering the nature of this connection. However, based on the theoretical and experimental evidence from this study, a further hypothesis can be presented: Instead of Linguistic Empathy deriving from Psychological Empathy, or Psychological Empathy deriving from Linguistic Empathy, I argue that they both derive from a singular processing mechanism that involves shifts in perspective. Perspective shifts are always imagined and never actual; no one truly embodies another person when experiencing the world from a different viewpoint. Instead, this shift is hypothetical, and this leap of perspective is precisely what experiencing Empathy amounts to. The nature of this perspective shift can be linguistic, cognitive, social, emotional, or some combination of these contexts.

Since the individual measure of Linguistic Empathy originated separately from previous measures of Psychological Empathy, some might argue that a measure of Linguistic Empathy can only apply to linguistic notions; attempting to use sensitivity to Linguistic Empathy as a measure of Psychological Empathy could be argued to lack substantive validity. However, this study takes the position that Linguistic Empathy sensitivity is a measure of a component that is inextricably linked to the practice of understanding and adopting other perspectives, and this component is necessary for Psychological Empathy. In addition to the correlation found in the experimental results, the well-known association of Psychological Empathy deficits with language difficulties serves as strong support for this connection. That the stimuli in the experiment are unrelated to socio-emotional notions of Psychological Empathy, I argue, is precisely what makes them more effective. Based on this unified theory of Empathy, honing an individual's Linguistic Empathy would sharpen the underlying ability to process the perspectives of others. The existence of an underlying Empathy construct would also support the inseparability of overlapping Empathy notions, as proposed by Baron-Cohen and Wheelwright (2004). I argue that although post-hoc classifications of situations and stimuli as, say, cognitive or affective, can be informative, the underlying Empathy process itself cannot be parsed.

A test of Linguistic Empathy would provide a more impartial measure of the underlying component that is responsible for shifts in perspective, and identifying a deficit of Empathy through a linguistic channel would sidestep the socio-emotional stigma that is entangled with Psychological Empathy. Typically, deficits of Empathy are stigmatized at least partially because of the social and emotional awkwardness that they can cause. Since the notion of an individual measure of Linguistic Empathy is novel to this study, and because it is an unemotional endeavor, a deficit in Linguistic Empathy would be comparatively less stigmatized. Regrettably, this study cannot directly address the

unfortunate social stigma that comes with the diagnosis of an Empathy deficit.

Nevertheless, I hope that this dissertation's discussion of the stigma-free notion of the individual measure of Linguistic Empathy can help to normalize the conversation around deficits of Empathy.

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