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THE ASSOCIATION BETWEEN COUPLES' DEMAND/WITHDRAW COMMUNICATION BEHAVIORS AND THEIR ACOUSTIC FEATURES AS EMOTIONAL AROUSAL INDICATORS

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The Association Between Couples' Demand/Withdraw Communication Behaviors and Their Acoustic Features as Emotional Arousal Indicators

Çiftlerin Talep Etme/Geri Çekilme İletişim Davranışları ve Duygusal Uyarılma Göstergeleri Olarak Akustik Özellikleri Arasındaki İlişki

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TABLE OF CONTENTS

List of Tables

List of Figures

ABSTRACT

Studies investigating the demand/withdraw communication behaviors of couples in the literature are usually conducted using measurements such as self-report or observational methods. In fact, when examining the behaviors in the couple interaction, in order to make sense of these interactions, not only see; it is also important to hear for signs that are not visible at first glance. In recent studies sound analysis has just begun to be used as a method in order to hear what is not seen between partners during their interactions. However, in these studies, only the fundamental frequency (f0) property, which is one of the prosodic elements of voice, was investigated. The other acoustic properties such as intensity and voice quality, which are related to fundamental frequency (f0), are also very important, especially when examining the partners' emotional arousal.

The current study aimed to investigate the relationship between couples' demand/withdraw communication behaviors, and their mentioned acoustic parameters as indicators of emotional arousal. The Couples Interaction Coding System (CIRS), developed by Heavey and his colleagues (1998), was used as an observational coding tool to measure the couples' demand/withdraw communication behaviors during their problem discussions. Actor Partner Interdependence Model (APIM) analyses were conducted to examine the link between each participant's demand/withdraw behaviors with their own and their partner's acoustic features with 102 newlywed heterosexual couples (204 partners). In general, the results showed that the men's topics cause less emotional fluctuation for both genders, compared to women's topics. In addition, the men's withdrawals had an impact on the vocalizations of the women, regardless of the subject under discussion. Finally, consistent with some studies in the literature, the current findings show that a gender-based distinction may be made for changes in communication behaviors, only during the discussion of women's topics. The theoretical and clinical implications of the findings as well as limitations and recommendations for future research are presented.

Keywords: communication behaviors, demand, withdraw, acoustic features, emotional arousal

ÖZET

Literatürdeki çiftlerin talep etme/geri çekilme iletişim davranışlarını araştıran çalışmalar incelendiğinde, bunların öz bildirimler veya gözlemsel yöntemlerle yapıldığı görülmektedir. Aslında çift etkileşimindeki davranışları incelerken bu etkileşimlere anlam kazandırmak için, sadece görmek değil; ilk bakışta görünmeyen işaretleri duymak da önemlidir. Bu konudaki son çalışma örneklerinde, karşılıklı etkileşim sırasında ortaklar arasında neyin görülmediğini duymak için ses analizi bir yöntem olarak yeni yeni kullanılmaya başlanmıştır. Ne varki, bu çalışmalarda sadece sesin prozodik unsurlarından biri olan temel frekans aralığı (f0) özelliği araştırılmıştır. Temel frekansla (f0) ilgili olan yoğunluk ve ses kalitesi gibi diğer akustik özellikler de özellikle eşlerin duygusal uyarılmalarını incelerken oldukça önemlidir.

Mevcut çalışma, çiftlerin talep etme/geri çekilme iletişim davranışları ile duygusal uyarılma göstergeleri olarak bahsi geçen akustik parametreleri arasındaki ilişkiyi incelemeyi amaçlamıştır. Heavey ve meslektaşları (1998) tarafından geliştirilen Çift Etkileşimi Kodlama Sistemi (CIRS), problem tartışmaları esnasında, çiftlerin talep etme/geri çekilme iletişim davranışlarını incelemek için gözlemsel bir kodlama aracı olarak kullanılmıştır. Araştırma için APIM analizi yapılmış ve 102 yeni evli heteroseksüel çiftin (204 partner) sonuçları analiz edilmiştir. Genel olarak, sonuçlar, erkeklerin konularının kadınların konularına kıyasla; her iki cinsiyet için de daha az duygusal dalgalanmaya neden olduğunu göstermiştir. Ayrıca erkeklerin geri çekilmeleri, tartışılan konu ne olursa olsun, kadınların vokalizasyonlarında etkili olmuştur. Son olarak, literatürdeki kimi araştırmayla tutarlı olarak, mevcut bulgular, iletişim davranışlarındaki cinsiyet bazlı bir ayrımın yalnızca kadınların konusu tartışılırken yapılabileceğini göstermektedir. Bulguların teorik ve klinik sonuçlarının tartışılmasının yanı sıra, sınırlılıklar ve gelecekteki araştırmalar için öneriler sunulmuştur.

Anahtar Kelimeler: iletişim davranışları, talep etme, geri çekilme, akustik özellikler, duygusal uyarılma

INTRODUCTION

"The emotions - love, mirth, the heroic, wonder, tranquility, fear, anger, sorrow, disgust - are in the audience."

—John Cage, Silence: Lectures and Writings

Communication plays a central role in understanding intimate relationships, as "nearly all relationship-relevant conflicts, emotions, and neuroses are played out ... either verbally or non-verbally" (Heyman, 2001, p. 6). The first known of these intimate relationships is undoubtedly the relationship that develops between the mother and the infant. According to Bispham (2006), musicality is part of a natural drive in human sociocultural learning which begins in infancy, because the newborns begin their lives with the most memorable note; cryingly. Then the newborn's mother responds to this call somehow. If the mother responds to the infant through attunement, matching, and mirroring, she organizes the infant's experiences and provides a safe base for the infant's development. As Malloch (1999) mentioned, movement (gestural, vocal, and emotional) is what allows communicative musicality to occur. Along with the infant starting to move freely, much more components are added to this common music like notes and nuances. Thus, acoustic analysis of vocalizations allows us to see into this movement in a very precise and illuminating way (Beebe et al., 1997). Natural human musicality plays a central role in the relationship with the mother, who is the key mediator at this stage (Gratier, 1999). As Malloch (1999) claimed, it has been shown that infants can discriminate between timing patterns, pitch, loudness, a harmonic interval, and voice quality. This can be considered as the first instinctive and enriched music-making process between dyads. Because as Trevarthen and Malloch (2000) mentioned, the baby hears the mother's song and moves with it, and the mother is unaware of her clever partner's dance. At the end of this process, this is expected to be mutual music-making in achieving intersubjective contact and attunement between participants which plays an important role in developing a sense of self and connection to others for the infant (Beebe et al., 1997). Above all, even in the absence of vocalization, it is known that the relationship between mother-infant is based on rhythmic reciprocity (Lester et al., 1985). Any rhythmic movement carries a musicality of its own. In fact, this is one of the basic elements that feed the creativity of the duo in their music and contribute to the continuation of communication in harmony. For the newborns on their own, the rhythm serves as a principle that it will benefit all kinds of interaction and communication throughout their life (Beebe et al., 1997). Gratier (1999) stated that infants use

rhythm to communicate with the outside world and that infants' rhythm sensitivity represents a basic desire to share their own feelings and experiences. Infants' interactions about six weeks after birth have been shown to be organized around the same primary rhythmic rules as an adult's speech. Malloch (1999) mentioned that how infants participate in and stimulate intuitive music in parents' vocal play, and that we are born this way and that infants' sympathy for music in the caregiver's voice results from the rhythmic coherence of innate body movements and modulation of affective expressions. Researchers have used the term, *interactional synchrony* to denote this holistic temporal organization of infant behavior, referring to the well-timed interplay of mutual engagement and disengagement between interacting partners (Gratier, 1999).

Trevarthen and Malloch (2000) claimed that the bodily and vocally expression is so powerful in the management of human relations that it deserves a better name so while extending the metaphor this can be called as *communicative musicality*. Malloch (1999) proposes that communicative musicality facilitates turn-taking, regulates the pitch-contours of the vocalizations of both care-giver and infant, and inflicts the timbre of vocalizations. Thus, he hypothesizes that the capacity to generate and participate in communicative musicality gives us our ability to be with another person in one texture of time, regardless of age, and allows this time to be shaped into mutually satisfying narratives of interaction through the inflection of vocal and bodily gesture. Communicative musicality is observed in early caregiver-infant communications, when the meanings of words are not important yet. And so, the duo's desire to 'attunement' with each other, creates the music such as the silence and natural sounds in our lives. In this musicality, emotions are the most important components. As Boşnak et al. (2017) stated that in addition to the mental front of "speech" represented in Broca and Wernicke parts, there is also one more part that concerns emotions and arousals. This second part of speech is called prosody, and defines the emotional components also including melody, pitch, toning, and gestures. Murray and Arnott (1993) mentioned that emotions as integral parts of the speech, carrying much of the information, and sometimes even more than the words. For example, the caregiver needs to understand and answer the infant's demands, screamings, cryings and gestures. Here, emotional reflections in the infant's voice, contribute to the reciprocity of the relationship between the duo. If there is an attunement between the dyad, the caregivers can understand the hidden messages and emotions discriminatingly so that they can respond effectively as a responsive listener. Brown and Gilligan (1991) highlighted that this way of attending to another's voice, silence, or natural bodily movements are the central in dyadic relationship. Along with the recognition of the partner (the infant for mother and the mother

for baby) progressively, the dyad creates music together including all the pauses, rhythms, and repetitions. Therefore, the music becomes more harmonic and unique for that dyad. And also, Adams (2010) draws attention to the role of the unspeakable in the co-created music of the dyad, namely prosody. Similarly, some studies also emphasized the importance of harmonious communication between the words, affects, body movements, and actions, that is, between the spoken and the unspoken (Nemesh, 2017).

Taking all these into consideration, it can be said that instinctive music composing starts from the birth, and it is re-created within all intimate relationships. Composed music is specific for all dyads and for every relationship. Therefore, in order to understand each relationship, we need to be a good listener and to see the distinctive elements such as the acoustic features as emotional arousal indicators.

The couple's problem discussion, as a kind of another communication process, gives an idea of the couple's relational processes. The communication behaviors exhibited by the partners, which communication behavior is adopted by which partner, and the possible reasons for this are all variables related to this process. During this association, it is important to look at "how" they communicate with each other to understand how partners perceive and contribute to the process. Thus, to examine the inferences during couple interactions, we should not only consider the content of their statements but how they say them. In other words, focusing on couples' vocal characteristics such as fundamental frequency, which is one of the prosodic elements of voice, during their communication are expected to give an idea about the couples' communication processes such as their emotional arousal.

Conflict communication behaviors, conceptualized by Sullaway and Christensen (1983), consists of three interaction patterns: demand/withdraw, mutual constructive communication and mutual avoidance communication (Dovala, et al., 2018; Schrodt, et al., 2014). Of these, mutual constructive communication behaviors, such as mutual expression and negotiation, are typically adaptive responses to conflict and are associated with couples' relationship satisfaction (Heavey et al., 1996). However, couples' mutual avoidance communication behaviors and demand/withdraw communication behaviors may be incompatible for them (Caughlin & Scott, 2010; Christensen & Shenk, 1991; Noller & White, 1990; Schrodt et al., 2014). Moreover, both the mutual avoidance communication behaviors and demand/withdraw communication behaviors are associated with increased relational distress (Christensen & Shenk, 1991; Noller & White, 1990; Schrodt et al., 2014). Especially the demand/withdraw communication behaviors that partners show in their interactions are marked as destructive and/or dysfunctional (Brimhall, Bonner, Tyndall, & Jensen, 2018;

Domingue & Mollen, 2009; Sullaway & Christensen, 1983). Study findings have consistently found an association between demand/withdraw communication and marital dissatisfaction and separation (Fogarty, 1976; Heavey et al., 1995; Noller et al., 1994; Peterson, 1979; Schaap et al., 1988). As a result of the asynchronization, partners' destructive communication behaviors are associated with their decreased relationship satisfaction. On the other hand, the situations in which synchronization between couples may be seen as constructive communication behaviors are also associated with their increased relationship satisfaction, conversely.

When examining the association between partners' demand/withdraw communication behaviors and their relationship satisfaction in studies that include physiological explanations especially about their synchronization or asynchronization, emotional arousal symptoms of partners are particularly important in predicting this association (Baucom et al., 2011, 2013; Denton, 2001; Verhofstadt et al., 2005). In terms of the communication behaviors used by the couple in the relationship, synchronization indicates the matching of their behavioral expressions and their arousals, especially when stress and emotional arousal levels increase (Harrist & Waugh, 2002). In addition, synchronization is also expressed by the "symmetrical" patterns that researchers use for partners who assume the same or similar roles. Similarly, asynchronization also refers to "asymmetrical" patterns in which the partners assume different or opposite roles during interaction (Sullaway & Christensen, 1983). The demand-withdraw communication behavior is one prevalent form of this asymmetrical communication pattern (Millwood & Waltz, 2008). In this cycle, which is conceptualized as polarization, the behavior of the partner is understood as both the antecedent and the result of the behavior of the other partner's behavior: While the more one partner demands, the more the other withdraws, or on the contrary, while the more one partner withdraws, the more the other partner demands (Baucom, et al., 2010).

Levenson and Gottman's (1983, 1985) studies showed the role of synchrony in couples. They found that the physiological synchrony between partners was stronger when they were discussing problematic issues in relationships, as opposed to the normal events of the day. In another study, male partners who were less demanding and more withdrawing during marital conflict were less aroused after the discussion; conversely, female partners reported more emotional arousal and negative affect since they were more withdrawing and less demanding, respectively (Verhofstadt et al., 2005). Thus, in the present study, the communication behaviors of couples during problem discussion, the emotional arousal they experience, and the associated acoustic properties during this period were examined.

In studies examining both communication behaviors and relational outcomes, various limitations of current methods were highlighted. Not focusing on the content of the responses which may be influenced by social desirability concerns but rather focusing on the way the responses are said may make it easier to interpret emotional arousal responses and couples' communicational synchrony or asynchrony. As a way to do this, focusing on the vocal characteristics as their emotional arousal indicators of individuals and searching for the traces of relationship-related variables through markers such as demand/withdraw communication behaviors constituted the method of this study. In other words, the present study aimed to contribute to the literature by exploring the role of vocal parameters related with the couples' demand/withdraw communication behaviors.

In the following section, first the literature on couples' demand/withdraw communication behaviors, partners' vocal parameters, and especially the fundamental frequency as emotional arousal indicator will be reviewed. Then, the method section will explain how the current study was conducted. Finally, the findings obtained in the present study are presented in parallel with the research questions. Finally, the aforementioned results, the clinical and research-related implications will be discussed.

CHAPTER 1
THEORETICAL FRAMEWORK AND REVIEW OF LITERATURE

1.1. DEMAND/WITHDRAW COMMUNICATION BEHAVIORS

The historical analysis of the demand/withdraw communication behaviors in the psychology literature begins with the first definition by Sullaway and Christensen (1983) as dysfunctional communication behaviors. Then Terman et al. (1938) stated that the most common complaint they observed as a result of their interviews with male partners was the "nagging" of female partners; when they talked to women, they reported that their obvious complaint was the male partners who withdraw themselves both physically and emotionally. The effort to find an answer to the question, "What distinguishes satisfying and dissatisfying marriages/relationships from each other?", continued systematically in the 1950s (Nichols, 2013). Another question frequently asked question has been: "How do couples communicate and how does this affect their relationship?"

Until recently, although the names of this pattern has been different, many there has been many attempts to explain the couples' polarization around closeness and distance. This pattern has been described and named by some researchers over time as "nag/withdraw pattern" (Watzlawick et al., 1967), the "pursuer/distancer dynamic" (Fogarty, 1976), and the "rejection/intrusion pattern" (Napier, 1978). Eventually Wile (1981) conceptualized it as "demand-withdraw behaviors", and Christensen and Sullaway (1984) have developed measures of the "demand/withdraw pattern" (Nichols & Rohrbaugh, 1997). Studies (Caughlin & Vangelisti, 2000) on these communication behaviors show that various constructs of individual differences influence couples' tendency to engage in demand and/or withdraw communication behaviors, rather than only the desire for more intimacy or more autonomy. For these reasons, ignoring the partners individually, and only examining the characteristics of the established long-term couple relationship would eliminate most of the implications (Holley, 2010).

Overall, the demand–withdraw is a maladaptive interactional behavior in which one partner complains, and the other avoids or withdraws from the interaction (Baucom et al., 2010). In this kind of interaction, the demander seeks change, makes a request; while the other, the withdrawer, favoring the status quo, defends themselves or avoids discussion. Thus, while

the actor criticizes and presses for change, the targeted one disengages (Christensen & Heavey, 1990; Heavey et al., 1993). And in the context of actors as agents of change and partners as targets of change, partners' withdrawal reflects an unwillingness to understand the actors' relationship concerns (Weger, 2005).

A growing body of research found demand/withdraw communication behaviors to be prevalent in distressed couples in numerous countries and cultures (Baucom et al., 2015) including Argentina (Falconier & Epstein, 2011), Australia (Noller et al., 1994), Belgium (Verhofstadt et al., 2005), Brazil, Italy, and Taiwan (Christensen et al., 2006), Germany and Switzerland (Bodenmann et al., 1998), the Netherlands (Kluwer et al., 2000), Pakistan (Rehman & Holtzworth-Munroe, 2006), the United States (Christensen & Heavey, 1990), and Turkey (Şahin et al., 1994; Özmen-Süataç, 2010; Okutan, 2016; Yiğit & Çelik, 2016; Gülaydın & Semerci, 2018; Karataş, 2019) demonstrating the widespread nature of the behavioral cycle.

Demand/withdraw communication behaviors also emerge as a common relationship interaction style among couples seeking therapy (Eldridge et al., 2007; Johnson & Zuccarini, 2011; Klinetob & Smith, 1996). The prevalence of this communication pattern, especially among distressed couples, and its effects on the couple relationship can be seen from the results of studies showing its prevalence in different cultures and the striking importance of couples' reasons for applying to therapy.

Another important reason to further study and understand the demand/withdraw communication is its association with relationship satisfaction that has been demonstrated in studies cross-sectionally and longitudinally (Brenda et al., 1998; Carrère & Gottman, 1999; Carroll, 2012; Gottman & Krokoff, 1989; Rogge & Bradbury, 1999; Taggart et al., 2019). In many studies, especially long-term relationship satisfaction is most distinctly related to how couples communicate about their problems (Fletcher, 2002; Gottman, 1994; Kiecolt-Glaser et al., 2003; Markman et al., 2010; McNulty & Russell, 2010; Taggart et al., 2019). Specifically, constructive forms of communication are associated with higher levels of relationship satisfaction, while destructive forms of communication, such as demand/withdraw communication, are both associated with a number of negative physical and mental health consequences (Baucom et al., 2015; Kelly et al., 2002; Rehman et al., 2010; Siffert & Schwartz, 2011) as well as with lower levels of relationship satisfaction (Baucom et al., 2015; Bornstein & Shaffer, 2017; Bornstein et al., 2016; Caughlin & Huston, 2002; Christensen et al., 2006; Heavey et al., 1995; Noller & Fitzpatrick, 1990; Papp et al., 2009; Tan et al., 2017). For example, increasing demand/withdraw communication behaviors are found in heterosexual

couples in the United States (Christensen & Heavey, 1990), Brazil, Italy and Taiwan (Christensen et al., 2006), as well as in homosexual couples (Baucom et al., 2010) are associated with decreased relationship satisfaction (Baucom et al., 2011). On the other hand, while some studies have found that demand/withdraw behaviors predict declines in satisfaction (Gottman & Levenson, 2000; Heavey et al., 1993, 1995; Kurdek, 1995), others have found null or even reverse longitudinal effects (Caughlin, 2002; Donato et al., 2014; Heavey et al., 1993, 1995). Although studies have so far produced inconsistent results regarding the direction of the association between relationship satisfaction and communication behavior, those mostly agreed on the factors interacting with relationship outcomes. According to those, relationship outcomes are ultimately determined by the stressful events such as problem discussion that occur, the interaction of each partner's individual characteristics and the ways they use to adapt to both (Jarnecke et al., 2016). Therefore, both intrapersonal (e.g. personal traits) and interpersonal factors (e.g. communication behaviors) interact with each other and affect relationship outcomes as satisfaction/dissatisfaction.

Despite the demand/withdraw communication behaviors' reputation for their negative effects, when these behaviors emerge, it is also likely to lead to some positive changes as well. What makes the demand/withdraw behaviors so disharmonious for both sides is the idea that the partner requesting change expects the other partner to surrender, and the partner who resists the change chooses to agree with the other partner's request or not (Karney & Bradbury, 2020). In fact, a certain level of demand/withdraw communication behavior is present in most relationships, as demanding and/or withdrawing are two common tools by which partners try to influence each other (Baucom et al., 2010). Therefore, what effects the couple's relationship is actually the way they try to influence each other, rather than the presence of these communicative behaviors. While demanders seem to invite their partners to participate in a collaborative discussion of change, they also do not achieve the expected result because of their verbalism that limits their partners' options to respond during the same interaction (Baucom et. al, 2011). Thereby, what actually causes the undesirable outcome is how the invitation for desired change is voiced by the demander.

Consequently, the demand and/or withdraw communication behaviors damage romantic relationships when they reflect disproportionate responses or resistance to change problems but improves relationships when it addresses and motivates the change in serious problems (Overall & McNulty, 2017). In other respects, some results suggest that the association between couples' affective states, physiological arousal levels, and their interactive manners remains consistent over time (Kiecolt-Glaser et al., 1996).

1.1.1. Gender-related Explanations of Demand/Withdraw Communication

A series of empirical studies on demand-withdraw communication behaviors revealed a gender linkage in these behaviors (Christensen & Heavey, 1990). Since early studies and the first observations, researchers have suggested a gender differentiation from dating couples to married couples cross-culturally and suggesting that the male partner mostly withdraws while the female partner demands (Caughlin & Vangelisti, 1999; Christensen, 1988; Christensen et al., 2006; Christensen & Heavey, 1993; Christensen & Shenk, 1991; Markman et al., 1993; Napier, 1978; Terman et al., 1938; Heesacker et al., 1999). Although this gender-based explanation has become a stereotype, some studies draw attention to the results that such a generalization cannot be made (Caughlin & Vangelisti, 2000). For example, in terms of the relationship duration, Holley (2010) suggested that couples in long-term relationships and in later stages of their lives may show greater gender-related differences in demand-withdraw communication behaviors than those in earlier life stages. On the other hand, there is evidence that these communication behaviors also occur in same-sex couples (Walczynski, 1998). Researchers investigating the demand/withdraw communication behaviors with both homosexual and heterosexual couples have found no differences between them in the polarization of demand-withdraw communication, or in the amount of demand or withdraw behaviors (Holley et al., 2010; Kurdek, 2005). Accordingly, Holley et al. (2010) found in a study with heterosexual and homosexual couples that partners show demand/withdraw communication behaviors regardless of their gender or the couple type. The researchers provide explanations from the perspective of different models regarding this gender stereotype linkage and other exceptional findings.

While understanding why communication behavior polarization emerges in couples, the essentialist approach suggests that differences between males and females derive from innate biological or psychological traits. This approach conceptualizes gendered properties as fixed, constant, and definite within the individual (Miller, 1976). This approach to gender-based differences encompasses both biological perspectives (biological essentialist models) and socialization perspectives (cultural essentialist models) (Aries, 2006; Elson, 2004; Gelman & Taylor, 2000). The cultural essentialist models argue that women dignify closeness and sincerity because of the social environment in which they grow up, while men value independence and autonomy. These inconsistent attributes can ultimately cause women to demand and men to withdraw while achieving their own goals (Holley et al., 2010).

According to this distinction, the social structural model that provides explanations from the socialization perspectives, suggests that partners' relative power differentiation in their relationships often lead to female partners being less satisfied than their male partners and their adoption of demanding behavior also (Jacobson, 1990). According to this traditional approach, women's desire for change gives rise to the possibility to complain, criticize or demand when communicating with their partners (Heyman et al., 2009). On the contrary, the powerful position of men leads them to adopt avoidance and withdrawal behaviors more frequently since they desire relatively less relational change. From this point of view, it appears that men and women are not intrinsically different but act differently as a result of socially constructed power imbalances (Holley et al., 2010). Thus, the social structure model argues that the power differences between the spouses are the main cause of the demand/withdraw communication behaviors (Christensen & Heavey, 1990; Heavey et al., 1993; Eagly, 1987; Eagly et al., 2000; Jacobson, 1990; Klein & Johnson, 1997; Klinetob & Smith, 1996).

In addition, Christensen et al. (2006) highlight the "desire for change" as one of the key concepts of the power while examining demand-withdraw communication behavior (Heavey et al., 1993). In accordance with this concept, if a partner desires for change more by comparison to his or her partner, the more that partner will demand and the more the other will withdraw. However, later studies found support for the effect of individual differences and indicated that, contrary to the traditional social structural model, the more frequent women demand/men withdraw rate cannot be attributed entirely to the greater desire for change of the female partners' than the male ones' (Caughlin & Vangelisti, 2000). This is because the evidence of the association between partners' desire for change and their demand/withdraw communication behavior is based on research that reveals that only the topics chosen by the partners themselves can maximize the difference between their desire for change (Christensen & Heavey, 1990; Heavey et al., 1993; Klinetob & Smith, 1996). For instance, the conflict structure model (Christensen & Heavey, 1990; Heavey et al., 1993) suggests that the partner desiring change is more likely to be a demander and the respondent is more likely to be withdrawn because the demander is dependent on the respondent to create change within the relationship, whereas the withdrawer can prevent any changes on his or her own. For example, the results indicated that the couples exhibit more self-demand/partner-withdraw when discussing their own topic and more partner-demand/self-withdraw when discussing their partner's topic (Holtzworth- Munroe et al., 1998; Klinetob & Smith, 1996; McGinn et al., 2009). These results contradict with the studies that draw attention to the effect of gender and/or couple type on the couples' communication behavior.

Additionally, while some studies have found demand–withdraw communication behavior polarization in males' topics (Holtzworth-Munroe et al., 1998; Klinetob & Smith, 1996), the majority of studies have found remarkable polarization in females' topics but not males' (Christensen & Heavey, 1990; Heavey et al., 1993). Whereas other researchers have found that males and females are not significantly different in either demanding or withdrawing communication behaviors during male-selected topics (Heavey et al., 1993). It does not yet seem possible to assume a direct relationship between desire for change and demand/withdraw communication behavior; because the generalizability of these findings is precarious.

Another possible explanation for the communication behaviors' polarization is made through gender role identities. For example, Bem and Lenney (1976) argued that the rigid masculine/feminine roles that an individual is trapped in may also cause polarization in the communication behaviors. Supportively, Markman et al. (1993) have suggested that stereotypical femininity leads to demand; while stereotypical masculinity causes withdrawal. From this viewpoint (the power differences approach), males and females are not essentially different, but act differently as a result of socially constructed power inequality (Holley et al., 2010).

Gottman and Levenson (1986, 1988) proposed another explanation called the "escape conditioning model" by linking gender differences in the demand-withdraw behaviors to emotional reactivity. This model is based on the assumption that the marital conflict produces high levels of arousal and negative affect, as it consists of violating the expectations of the spouses and interferes with each other's achievement of their goals (Berscheid & Ammazzalorso, 2001). Whereas the conflict structure model suggests that both males and females should withdraw mostly on issues chosen by their partners; the escape conditioning model states that men should withdraw more than women, regardless of who determines the subject of discussion (Baucom et al., 2010). According to this model, males are more inclined to withdraw, as they experience more physiological arousal than women during relationship conflict (Gottman & Levenson, 1988). However, there are studies also showing that women are physiologically more responsive during relationship conflict than men (Kiecolt-Glaser et al., 1996). Some studies also did not find a relationship between an individual's higher levels of emotional arousal and higher levels of withdrawal behavior (Baucom et al., 2009a; Denton, 2001; Kiecolt-Glaser et al., 1996; Kiecolt-Glaser et al., 2003; Loving et al., 2004; Vogel et al., 2008). But then, Baucom et al. (2015) have highlighted in their interpersonal communication model that women's higher demanding communication behavior were remarkably associated with their own higher vocally-encoded emotional arousal and their partners' lower vocally-

encoded emotional arousal. While men's higher withdrawal communication behaviors were associated with their partners' higher level of vocally-encoded emotional arousal. In the same study, an explanation for this situation was that women as demanders discern low levels of expressed negative affect by their partners as their partners withdraw and this is perceived as a lack of engagement, so women demand more. In this double impasse, men may withdraw more because of their emotional intensity during discussion.

Despite inconsistent empirical evidence, the notion that demand/withdraw behavior and emotional arousal are tightly linked to partner withdrawal behavior continues to appear in empirical research, clinical case studies, and couple therapy guidelines (Wile, 2013). Since the escape conditioning model ignores the dynamic interaction of the interacting partners, it basically focuses on the intrapersonal relationship of an individual's arousal and the same person's behavior (Baucom et al., 2015). However, current findings related to polarization theory, suggest that emotional arousal and demand/withdraw behavior can affect each other through a combination of interpersonal pathways and described demand/withdraw behavior as a cyclical pattern of interaction in which each partner's behavior occurs as a result of the other partner's behavior (Baucom et al., 2009b, 2011, 2015; Denton, 2001; Heffner et al., 2006; Jacobson & Christensen, 1996; Kiecolt-Glaser et al., 1996; Verhofstadt et al., 2005). The interpersonal process model of demand/withdraw communication behavior that defends the same understanding and also includes the polarization concept. The interpersonal process model provided support for sex-related and role-specific associations between vocal emotional expression and communication behavior polarization (Leo et al., 2020). According to this model, the intense levels of polarized communication behaviors are most likely to occur within the context of affective polarization between the two partners. Affective polarization occurs when both partners experience similar levels of negative affect internally but express different levels of outwardly observable negative affect. The results indicated that higher levels of partners' negative affect were associated with greater emotional arousal and with both increasing demand/withdraw communication behaviors (Baucom et al., 2011; Kiecolt-Glaser & Newton, 2001). For example, in a study, higher levels of demand-withdraw seen in the context of higher levels of physiological arousal, higher self-reported negative affect, and higher levels of negative communication behaviors were associated with significantly lower levels of relationship quality, respectively (Holley, 2010). But some studies have found out that higher levels of arousal are associated with greater demanding behavior for both genders and therefore these studies also show that demanding communication behavior is more related to affective arousal than withdrawal communication behavior (Baucom et al., 2011).

Considering the limitations and inconsistencies of the models described, it appears that a new perspective is needed that combines the individual differences and social structural models (Caughlin & Vangelisti, 2000). According to interpersonal explanations about communication behaviors of couples, a new method while measuring their affect-related implications such as emotional arousal is needed. Thus, in the current study, the association between partners' demand/withdraw communication behaviors and their voice features were examined for a methodological contribution to the literature.

1.1.2. Voice Features as Emotional Arousal Indicators

The importance of emotional expressions transmitted to a listener in speech through what is conveyed and its effect on the respondent has been explored since rhetorical studies as early as the Greek and Roman periods and in Western philosophy (Kennedy, 1972). Similar studies, along with modern evolutionary biological studies, regained importance in the 19th century (Darwin, 1872). The examination of the effect of affect on vocalization began in the early 20th century, with the use of analysis methods called electroacoustics (Scripture, 1921; Skinner, 1935) in the diagnosis of mental disorders in psychiatry (Scherer, 2003).

From that day forward, voice parameters have been considered as clues to partners' interactions (Baucom et al., 2009a; Gottman et al., 1997), as well as important sources of information about the individual's speech (Georgiou et al., 2011). Many studies (Chakravarthula et al., 2015) have been conducted on the extraction and conceptualization of the behaviors of interacting couples using information gathered from various methods such as vocalization (Black et al., 2010; Lee et al., 2014), visual gestures (Xiao et al., 2013), and the use of spoken language (Georgiou et al., 2011). The meaning expressed by a particular act of speech is completely ambiguous when analyzed only textually, because the same expression can correspond to different actions, and a single statement may contain different messages depending on how it is spoken (Jacobs, 2002). In addition, the feature of speech, which presents many data about the speaker, including physiological, social and psychological characteristics such as gender, age, and affectional state, is known as indexical information (Abercrombie, 1967; Laver, 1989; Laver & Trudgill, 1979; Namy et al., 2002). This information is considered very important as it affects the listener's perception of the individual speaker and what has been spoken. Therefore, it is important to focus on the voice parameters that show how something is spoken, as well as its content so that what is said can make full sense. Because the speaker's voice can reflect various unique characteristics of the speaker or variables such as the speaker's

emotional state, the form of pronunciation, that is, what is meant by the spoken or other language elements that cannot be encoded by grammar or vocabulary choice (Harma, 2014). Consequently, speech consists of both words (textual information) and vocal (indexical) properties (Markel et al., 1973).

Voice parameters are the non-verbal properties of a verbal message, and these parameters are important when examining a behavior in question as they are less controllable than other nonverbal behaviors (Galili et al., 2013). The importance of vocal cues for the expression of our emotional states has been discussed in many studies (Burgoon et al. 2010; Lindstrom et al., 2012; Kujala et al., 2005; Scherer, 1986, 2003). As Darwin (1872) pointed out at the beginning, the human voice is one of the main indicators of social and emotional communication. And also, as Shackman and Pollak (2005) stated that the sense of sound seems to have primary importance, especially in early development and in the transmission of emotional expression that continues throughout human development.

Vocal characteristics are very important in terms of their reflections in the communication of the couple as well as the individual. For example, studies have associated vocal cues of communication with indications of romantic relationships (Noller, 1980) such as intimacy, relational outcomes, emotion regulation skills, mirroring ability, and/or attachment-related variables. Because emotions influence physiological processes, which in turn influence the acoustic characteristics of speech (Spencer, 1857). Thus, depending on the specific physiological situation, certain acoustic properties can be expected to be present in vocalization (Juslin & Laukka, 2003). Furthermore, the vocalization characteristics of individuals seem to be a useful indicator of emotional states even in neutral conditions, in other words, when there is no arousal statement during any affect-related situations. Because even small changes in emotional states can be easily detected through the vocal cues (Harma, 2014). Affect-related vocal expressions are as important as facial expressions also in reflecting emotion in an individual's life, and these vocalizations are recognized at rates comparable to facial expressions across cultures (Scherer & Wallbott, 1994). For example, according to Neumann and Strack (2000), people can easily recognize the emotions of others when they see facial expressions or hear their vocal expressions. However, when the literature is examined, there are very few studies on what individuals and couples reflect in their communication with their vocalization. Therefore, in the present study, the vocalizations of partners as a couple or/and as individuals were examined in terms of both their own communication behavior and their effects on each other.

Many physiological changes experienced by individuals significantly affect aspects such as respiration, vocal cord vibration and articulation in sound production and thus their vocalization (Juslin & Laukka, 2003). These physiological changes experienced by individuals are also manifestations of the emotional arousal changes experienced at that time. As the findings of many studies indicated, voice characteristics are the strongest clues in terms of the effects on listeners' emotional expression ratings such as speech speed/tempo, sound intensity/volume, sound quality, and fundamental frequency/pitch (Bänziger & Scherer, 2005; Bradlow et al., 1999; Juslin, 1997, 2000; Juslin & Laukka, 2003; Juslin & Madison, 1999; Lieberman & Michaels, 1962; Nygaard et al., 2000; Scherer & Oshinsky, 1977). When all these findings are evaluated, the variables such as fundamental frequency/pitch, intensity, and voice quality have been examined in terms of emotional expressions of individuals and their effects on each other while interpreting partners' inter-related communication behaviors in the present study.

In terms of understanding the behavioral mechanisms underlying the observed variables, the most studied vocal features, especially in the field of psychology, are the prosodic features (Frick, 1985). Intensity and the fundamental frequency range (f0), or pitch, are the most commonly studied prosodic parameters, especially in emotional arousal research (Juslin & Scherer, 2005). Another acoustic feature that has been widely researched in terms of capturing paralinguistic information and especially emotion recognition function in the field of psychology is the jitter and shimmer parameters, which are under the voice quality dimension (Farrus et al., 2007), and were also evaluated to be part of prosody in some studies (d'Alessandro, 2006). Many studies indicated, such prosodic features as fundamental frequency, intensity and voice quality are strongly associated with speaker's emotional states and intentions independently of verbal content (Bachorowski, 1999; Banse & Scherer, 1996; Frick, 1985; Grichkovtsova et al., 2012; Hammerschmidt & Jurgens, 2007; Juslin & Laukka, 2003; Williams & Stevens, 1972). In a study by Galili et al. (2013), the results emphasized gender differences in the acoustic models of command and request sentences and showed that women more likely to benefit from tension reduction strategies, thus making them less dominant in the intention of both imperative and willing statements. For example, female partners exhibited a stronger increase in mean f0 levels and a greater reduction in the speech rate in their command expressions, compared to male partners. Additionally, compared to men, women also exhibited a stronger increase in the mean f0 levels and a stronger decrease in voice intensity during their request sentences. Therefore, during a conversation, keeping track of mentioned vocal parameters rather than just focusing on the content; it is possible for the

audience to notice both the gender differences in the communication behaviors and strategies displayed in this dialogue, and the differences in these parameters that occur according to the intention of the speaker.

In this study, different voice parameters were used to interpret the features that exist in a vocalization. Firstly, in literature, the measurement of energy in the sound signal is defined as intensity. This measurement is mostly measured based on the amplitude of vocal waves and the unit of measurement is explained by a logarithmic transformation of this amplitude called decibels (dB; Sundberg, 1991), and it is perceived as voice loudness (Galili et al., 2013). In a conversation, the intensity affects the prosody. For example, higher intensity was associated with higher value, higher tension, and energy (Ilie & Thompson, 2006). As another parameter, the voice quality dimension is evaluated as a distinctive feature for affect-related cues during interactions (Scherer, 1986). Since the fundamental frequency parameters (pertaining to pitch) are remarkably important in the vocal expression of emotion (Black et al., 2013; Bulut & Narayanan, 2008; Busso et al., 2009a, b; Grimm et al., 2007; Juslin & Scherer, 2005; Lee et al., 2009; Yildirim et al., 2010). Voice quality provides information about the speaker's emotional state to the listener. In Scherer's (2003) study, the results showed that the voice quality parameters and f0 level changed with affective states and conveyed the emotion independently from the verbal context. Uncertainties that can be experienced in estimating sound quality parameters can cause these dimensions to be underestimated and often overshadowed by the other prosodic features (Black et al., 2013). That is why many studies in engineering fields have suggested that these dimensions are less distinctive than other properties (Schuller et al., 2009). However, sound quality parameters play a very important role in conveying the emotions in speech to the listener (Gobl & Chasaide, 2003). It is necessary to mention two features under this dimension, jitter and shimmer. Briefly, while jitter is a variation of the short-term cycles of the pitch; shimmer corresponds to a similar quantity for amplitude (Bachorowski & Owren, 1995; Eyben et al., 2010). Johnstone and Scherer (2000) suggested that it may be possible to determine the similarity or affinity between affective categories by examining the voice quality, intensity, and valence together. Thus, in the present study, all the mentioned properties were examined as acoustic features of the partners. However, the fundamental frequency range or pitch has been widely studied compared to other mentioned properties. Thus, the relevant literature on fundamental frequency will be reviewed next.

1.1.3. Fundamental Frequency as a Distinctive Prosodic Feature

The fundamental frequency (f0) refers to the lowest harmonious frequency of sound waves during human speech (Weusthoff et al., 2013a). The fundamental frequency (f0), which expresses the encoded arousal and the vibration pattern created by the sound folds during phonation, is highly related to perceived pitch, and therefore, it is in a constant state of change due to the mentioned emotional arousal and vibrations during the interaction (Juslin & Scherer, 2008). F0 is measured in hertz (Hz), and higher frequency vibrations are accordant with higher F0. Higher F0 is perceived as higher pitch of the voice. And higher levels of f0 related with the higher levels of affective arousal (Banse & Scherer, 1996). The two measures of the fundamental frequency range are the f0 mean and f0 variance which refers to how much a vocalization changes around the mean value (Tusing & Dillard, 2000).

The fundamental frequency (f0) has been interpreted in a variety of ways as a vocally encoded emotional arousal sequence that enables individuals to convey their emotions nonverbally, regardless of words and language (Weusthoff et al., 2013a). This parameter is more closely associated with the person's psychological state rather than the physiological (Johannes et al., 2007) one which is making it possible to detect psychological and so emotional-related changes and less predisposed to components that affect physiological measures of arousal (Sloan & Kring, 2007). Thus, in psychology research, the experts presume a direct co-variability between specific vocal cues and emotional meaning, independent of verbal content. For instance, one assumption is that the level of f0 or pitch is linearly related to the degree of arousal (Scherer, 1986). Vocally-encoded emotional arousal, which is the measure of emotional expression used by Baucom and colleagues (2015) in the first test of the interpersonal process model, is widely accepted as a measure of emotional intensity. However, vocally encoded emotional arousal values were unable to convey information about emotional valency (i.e., emotional positivity vs. negativity) or specific emotional states (Russell et al., 2003). Therefore, voice features, especially fundamental frequency, have been examined in terms of emotional arousal and emotional intensity reflections in the present study.

Although it is not known whether there are similar patterns of association between partners' vocally-encoded emotional arousal and their demand/withdraw communication behaviors and/or partners' subjective emotional experiences and their demand/withdraw communication behaviors (Baucom et al., 2015); a study found that higher levels of vocally-

encoded emotional arousal were moderately associated with higher levels of subjective negative affect and adverse experiences during couple conflict (Weusthoff et al., 2013b).

According to Baucom and Atkins (2013), the polarization process which states that when one partner is highly aroused it becomes more difficult for the other to remain at a functional arousal level, is also related to fundamental frequency (f0). Precisely for this reason, fundamental frequency offers a number of procedural and conceptual benefits to be used in studies of romantic relationships. In a study, findings show that higher levels of a spouse's f0 have been linked to higher levels of negative communication behaviors such as criticism, negative solution, justification, and disagreement, both observed and self-reported, and to lower levels of observed non-verbal positive communication behaviors (Weusthoff et al., 2013b). Thus, the link between higher levels of f0 as an emotional arousal indicator and higher levels of total demand/withdraw communication behaviors is consistent with studies that have linked interaction behaviors to affective arousal during a conflict or disagreement (Kiecolt-Glaser & Newton, 2001).

In related studies, the link between emotional arousal and demand/withdraw communication behaviors, especially its association with demanding behavior, has been examined using physiological measurements (Kiecolt-Glaser et al., 2003), subjective reports (Verhofstadt et al., 2005) and audio-encoded emotional arousal (Baucom et al., 2009; Baucom et al., 2011, 2015). Of these three methods, audio-encoded emotional arousal measurements are particularly noteworthy; because they convey information about the unobservable inner emotional states of the partner (Weusthoff et al., 2013b) and his/her subjective experience (Baucom et al., 2010) to the other partner. Most importantly, audio-encoded emotional arousal measurement can be perceived by the listener, unlike blood pressure or heart rate (Baucom et al., 2011). These results mean that while observing the communication behavior of partners during their interactions, clues that are not included in the content of what is said can be easily measured by the listeners.

Findings show that fundamental frequency (f0), provides information about individual traits (such as biological sex), relational variables (such as communication behaviors) and states (such as emotional arousal) during the current interaction (Weusthoff et al., 2013a). For example, the findings show that the increase in partners' use of demand/withdraw communication behavior is associated with an increase in their emotional arousal, and so cause an increase in fundamental frequency range of their voices (Baucom et al., 2011). On the other hand, when the partners' constructive communication behavior increases, there is a decrease

in their fundamental frequency range (Baucom, et al., 2009; Weusthoff et al., 2013a; 2013b). The finding of one of these studies that the partners' fundamental frequency range is not significantly related to their mutual avoidance and so their withdrawal communication behavior, is noteworthy (Weusthoff et al., 2013a; 2013b). Recently, innovative models based on examining both the vocal and lexical methods have been proposed in order to identify and interpret the changes in the behavior of couples during their interactions (Nasir et al., 2017). Based on these results, in the present study, the gender differences in the mutual interaction of the changing vocal characteristics of the partners with their own and their partners' communication behaviors was examined. Because as Harma (2014) stated that gender differences in voice features are important for examining especially f0 during the couple interactions.

1.2. CURRENT STUDY

While the current literature focuses on the demand/withdraw communication behaviors of couples, it has not yet been able to provide a consistent answer to how and by what mechanisms these cyclical and interactive behavioral patterns can be predicted. Studies mostly focus on the environmental variables (such as welfare level, extended family influences, upbringing styles, culture-specific variables) or variables brought by individuals (attachment styles, personality traits, subjective well-being), which are thought to associate with the couple's relationship. However, the self-reports and observational techniques used to examine these related variables have some limitations that affect both research and clinical assessments, and that is reflective of the current state of psychometrics (Baucom et. al, 2011; Parra et. al, 2017). The methods that focus only on the content of the narrative have the difficulty of making sense of couples' relationship representations. Spinelli et al. (2019) refers to this as a defensive inhibition strategy and claims that this strategy seems to control the content but not the prosody of narratives. Because prosody is known to have the potential to allow a better understanding of partners' relationship-related behaviors that they use when discussing with each other (Crowell et al., 2002). Thus, the purpose of the present study was to investigate the link between the partners' demand/withdraw communication behaviors and their acoustic properties as an indicator of emotional arousal during problem discussion sessions.

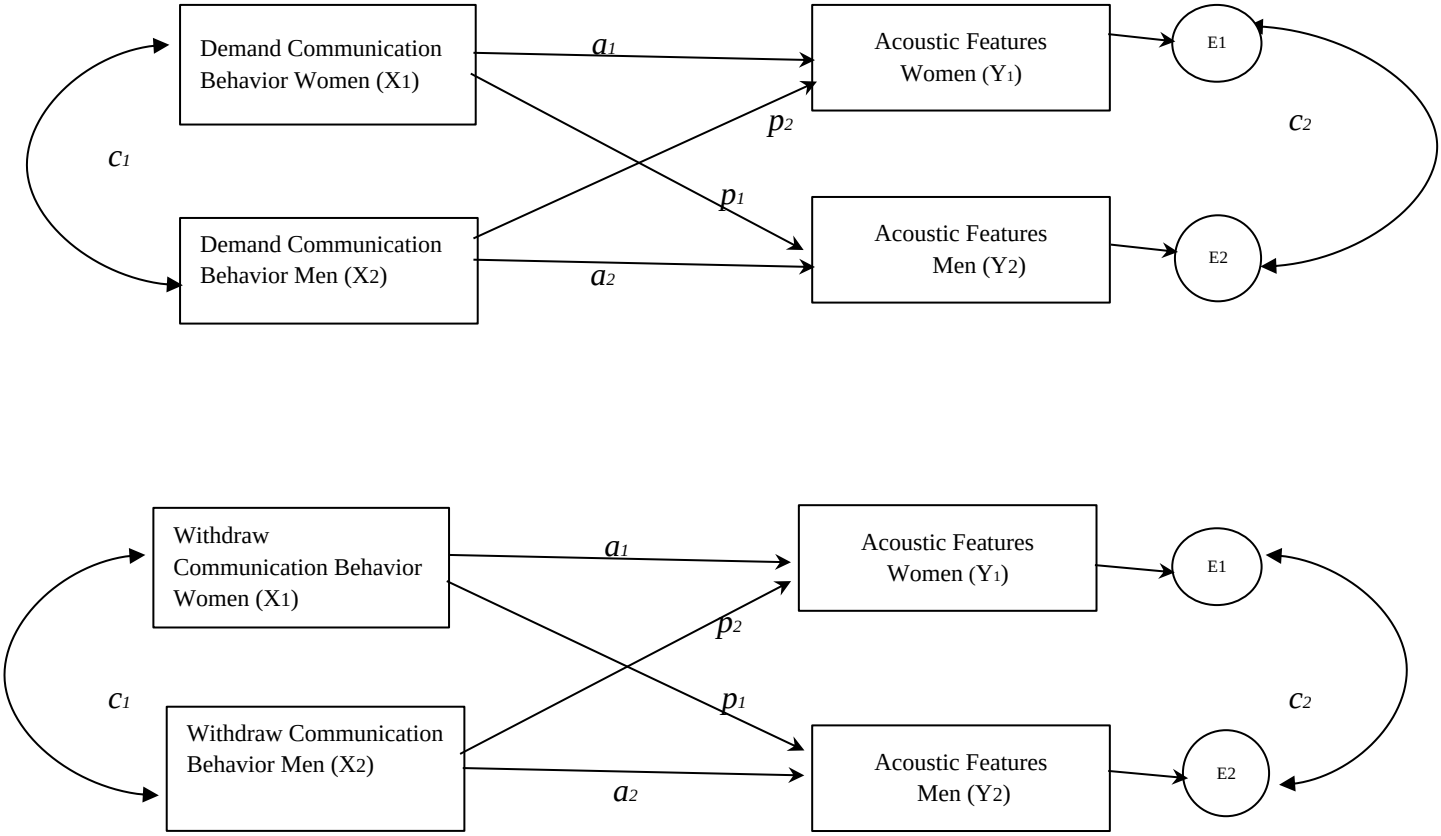
1.3.1 Research Questions and Hypotheses

The current study investigated the following research questions and the conceptual model in the study can be seen in Figure 1:

Question 1: Is participants' demand communication behavior related to their own and their partners' voice features?

Question 2: Is participants' withdraw communication behavior related to their own and their partner' voice features?

Figure 1.1. *Conceptual Models for APIM*



Note. Actor effects are denoted by *a*, partner effects are denoted by *p*; *c1* indicates the correlation between *X1* and *X2*, *c2* indicates the residual non-independence of *Y1* and *Y2*.

CHAPTER 2

METHOD

2.1. PARTICIPANTS

The data in this study were originally collected as part of a longitudinal study funded by TUBITAK (Project number 113K538) for which the thesis advisor was the primary investigator (Kafescioğlu). Only the couples with audio recordings of their communication were included in the current study due to the nature of this study. Consequently, the sample of the current study consisted of 102 heterosexual couples. The inclusion criteria were based on the original study which was a study examining newlyweds' relationships. Thus, the inclusion criteria included being in a first marriage, having no children, being newlywed (married for a maximum of 15 months), cohabitating, and participating in the study as a dyad.

The participants' ages ranged from 20 to 48 (20 – 48 for women, 23 – 44 for men). The average age of women was 27.22 (*SD*=4.22) and 28.57 (*SD*=3.29) for men. The marriage lengths of the couples varied between 1-15 months due to the inclusion criteria, with an average duration of 5.92 months (*SD*=3.42) for women, and of 5.99 months (*SD*=3.35) for men.

Participants' income levels ranged between 851-1500 TL to 7501 TL and above for both genders. Lastly, the educational levels ranged between secondary and postgraduate degrees (ns= 102). See Table 1 for basic information about participants' descriptives. More detailed information about the demographic characteristics of the sample are provided in the results chapter (see 4.2.1 Demographic Descriptive Statistics).

Table 1.1. *Basic Demographic Information*

	Women			Men			All Participants		
	N	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
Age (n)	102	27.21	4.21	102	28.57	3.29	204	27.89	3.84

Marriage Duration in months (n)	102	5.92	3.41	102	5.99	3.34	204	5.95	3.37

2.2. PROCEDURE

Participants were a subgroup of a sample who participated in a larger study with newlyweds. They were recruited through posts in social media and various email groups, as well as brochures published in different universities, municipalities and institutions in Istanbul. Furthermore, the announcements informed the couples that they would receive a shopping voucher if they participated in the study. Couples interested in the study were contacted by phone or e-mail to provide further information about the study. Individuals who agreed to participate in the study were sent an e-mail containing their identification number and a link to the online surveys that were used in the original study. The partners who filled out the online survey came to the Relationship Research Lab which is equipped with rooms with video cameras at Ozyeğin University, they were informed about both the video and audio recordings to be recorded in the laboratory and their consents were obtained. Upon arriving at the lab, each partner was asked to identify a topic they thought was important in their relationship and had a disagreement, according to the instructions of Couples Interaction Coding System (CIRS; Heavey et al., 1998), the measurement tool of the original study. Each partner was given ten minutes to discuss their chosen problem topic together with their partner, and the couple was left alone to discuss the first problem. When the first 10 minutes were over, the research assistant knocked on the door to inform the couple and asked them to switch to the next/other partner's problem topic. When the second 10-minute problem discussion session was over, the couple was informed again by the assistant that the recording was over.

2.3. MEASURES

2.3.1 Demographic Information Form

Participants were asked to provide information about their age, sex, duration of their marriage, their income level, and partners' educational level (see Appendix A) but names were not taken. In order to provide anonymity, participants were asked to enter their identification number that would be used by both spouses to participate in an online demographic survey.

2.3.2 Demand-Withdraw Communication Behaviors

The Couples Interaction Coding System (CIRS), developed by Heavey and his colleagues (1998), is an observational coding tool specifically designed to encode couples' problem-solving discussions. CIRS allows for rating each individual while interacting with their partner during problem discussions. In accordance with this measurement tool, each partner independently chooses their own problematic topic and verifies with the other partner. Then, each partner is given 10 minutes to discuss their selected topic, and this interaction is recorded audio-visually to be evaluated according to 13 codes. The audio-visual data were collected via following the procedures of the CIRS in the current study. The data were coded only for the demanding (blaming, pursue for change) and withdrawing communication behaviors (withdrawing, avoidance, engagement).

Heavey and his colleagues (1998) recommend that coders should consist of teams of 3-4 people, and each team codes the behavior of only one of the spouses. In order to ensure objectivity of observational coding, observation coders are chosen among people who are not knowledgeable about the hypotheses of the research. In the present study, the observation coders were comprised of 11 Psychology undergraduate students at Ozyegin University. After 17 hours of training given by the thesis advisor, the coders discussed the coding while coding the eight records of the training DVDs and the seven records obtained from the researcher's previous pilot study until the consensus between the coders reached a minimum of 80%, and the coding teams were formed later. The coders continued their weekly training meetings with the thesis advisor in order to maintain consistency while coding the research data. In accordance with the literature (Floyd & Rogers, 2004), after the coders completed the training, the advisor also coded 30% of the coded observations in order to determine the shifts in coders and to give feedback. Thus, feedback on coding was shared at weekly meetings with the coders. The records in which the bilateral consensus rates between the coders and the advisor fell below 80% were monitored with the whole group, and the categories that could not be agreed upon were discussed and consensus was achieved.

The reliability coefficient among the coders were computed based on the percentage of consensus among the coders and the weight of the category in all categories were multiplied, and all categories were added and inter-coder reliability was obtained for each coding. The reliability coefficients for blaming, pressure for change, withdrawal, avoidance, and engagement in discussion were found as .83, .81, .77, .74 and .72, respectively.

2.3.3. Audio Data

Prosodic features associated with various behavioral aspects (Black et al., 2013; Gibson et al., 2011; Lee et al., 2014) and voice quality dimensions that help to identify emotions (Kwon et al., 2003; Lee et al., 2011b) are among the audio measures used in the current study. The voice quality dimensions were computed by an engineering graduate student at Ozyegin University. Jitter and shimmer variables were extracted for the. For extraction of voice quality features OpenSMILE (Eyben et al., 2013), an open-source tool, and The INTERSPEECH 2010 Paralinguistics Challenge (IS10) (Schuller et al., 2010) config file was used. Subsequently, three statistical functions (mean, standard deviation, and variance) of all voice features were calculated for each problem discussion session. During the problem discussion sessions, statistical functions were calculated separately for each partner, generated a session-based set for each voice feature. The summary of the voice features and their statistical functions used are shown in Table 2.

In the current study, fundamental frequency (f0) and intensity were derived from each partner's separate speech during the problem discussion as a main prosodic feature. Speeches were divided into sections per each partner using audio editing programs such as Adobe Premiere Pro, and data containing speech sections were obtained for each speaker without any other human or background voices.

According to the literature, the general mean f0 values are known as 225 Hz for women and about 120 Hz for men (Weusthoff et al., 2013a). In the present study, prosodic factors were examined by considering mentioned gender-based differences. In addition, using Praat (Boersma & Weenink, 2013), a free multi-platform program, audio recordings divided into relevant sections were analyzed and mean, variance, standard deviation of acoustic features were calculated for each partner separately throughout both conversations.

Table 2.1. *Voice Features and Their Statistical Functions*

Voice Feature Types	Voice Features Names
Prosody	Pitch (f0), Intensity
Voice Quality	Jitter, Shimmer
Functionals	Variance, Mean

CHAPTER 3

RESULTS

3.1. MISSING DATA AND DATA CLEANING

Data were exported from Excel to IBM SPSS 21.0 (IBM Corp, 2020) in .sav formats. Over all 4 couples (8 individuals) were excluded from the final sample due to missing audio-visual data. 14 (28 individuals) couples were also excluded because extensive amounts of data were missing from both partners' responses. Eventually, 102 couples (204 partners) constituted the final sample because they filled out Demographic Information Form with minimal data missing and had audio data without any impairments.

3.2. PRELIMINARY ANALYSIS AND DESCRIPTIVE STATISTICS

After data cleaning normality, linearity and relations between variables were examined with univariate and bivariate analysis. The analyses proffered in this section were conducted on IBM SPSS 21.0 (IBM Corp, 2020). Descriptive statistics were utilized in assessing the normality assumption via the measures of skewness and kurtosis. In the analysis conducted, skewness and kurtosis statistics were calculated, separately, for men and women due to the dyadic structure of the data and there were no skewness values exceeding +/- 3 and kurtosis values exceeding +/- 10 in the data of women, men or both. According to Kline's (2011) limits, all variables conformed to the assumption of normal distribution and there was no outlier (see Table 3.1., and Table 3.2.).

Table 3.1. *Descriptive Statistics for CIRS, and Voice Features by Gender*

	Range	Min-Max	*M*	*SD*	Skewness	Kurtosis
Women						
Demand Communication	4.83	1.00-5.83	2.78	1.14	0.65	-.29
Withdraw Communication	2.78	1.44- 4.22	2.33	.55	1.26	1.57

Pitch Variance	7.44	1.43- 8.87	4.36	1.04	.56	1.24
Intensity Mean	16.55	56.99-73.54	68.23	2.22	-.77	2.62
Intensity Variance	107.93	31.15-139.08	59.80	18.78	1.34	2.73
Jitter Mean	2.89	2.00-4.89	3.13	.51	.96	1.25
Shimmer Mean	.58	1.52- 2.10	1.78	.11	.51	.62
			Men			
Demand Communication	4.17	1.00- 5.17	2.47	.88	.81	.52
Withdraw Communication	5.44	1.56- 7.00	2.55	.83	2.08	6.39
Pitch Variance	8.95	2.25- 11.20	5.98	1.84	.50	.05
Intensity Mean	11.58	61.13- 72.71	67.62	2.11	-.26	-.05
Intensity Variance	98.36	34.42- 132.78	67.73	20.61	.82	.44
Jitter Mean	3.97	2.08- 6.05	3.30	.57	1.01	2.46
Shimmer Mean	.54	1.63- 2.17	1.94	.10	-.57	.30

Note. CIRS = Couple Interaction Coding System (Demand/Withdraw Communication Behaviors), Voice Features = Pitch variance, intensity mean, intensity variance, jitter mean, and shimmer mean values, *M*= mean, *SD*= standard deviation.

Table 3.2. *Descriptive Statistics for CIRS, and Voice Features for All Participants*

	Range	Min-Max	*M*	*SD*	Skewness	Kurtosis
All Participants						
Demand Communication	4.83	1.00- 5.83	2.63	1.03	.80	.19
Withdraw Communication	5.56	1.44- 7.00	2.44	.71	2.09	7.29
Pitch Variance	9.77	1.43- 11.20	5.17	1.70	.95	.96
Intensity Mean	16.55	56.99-73.54	67.92	2.19	-.49	1.19
Intensity Variance	107.93	31.15-139.08	63.77	20.09	1.04	1.18
Jitter	4.05	2.00- 6.05	3.22	.55	1.00	2.00
Shimmer	.65	1.52-2.17	1.86	.13	-.06	-.75

Note. CIRS = Couple Interaction Coding System (Demand/Withdraw Communication), Voice Features = Pitch variance, intensity mean, intensity variance, jitter mean, and shimmer mean values, *M*= mean, *SD*= standard deviation.

3.2.1. Demographic Descriptive Statistics

As reported in the Method section, the majority of the participants' ages varied between 20-29 (76.5 %), and half of the sample' had bachelors' degree (52.5%). The marriage lengths of the majority ranged from 1 month to 9 months (*N* = 173, 84.8%) and their income level was between the range of 5001 TL and 7500 TL (*N*= 178, 87.2%).

Table 3.3. *Demographic Characteristics of the Sample*

Variables	Categories	*N*	*%*
Age	20-29	156	76.5
	30-39	44	21.6
	40-48	4	2
Marriage Length in Months	1-3	54	26.5
	4-6	77	37.7
	7-9	42	20.6
	10-12	17	8.3
	13-15	14	6.9
Income	851-1500 TL	10	4.9
	1501-3000 TL	51	25
	3001-5000 TL	58	28.4
	5001-7500 TL	69	33.8
	7501 TL and above	16	7.8
Educational Level	Middle School	4	2
	High School	23	11.3
	College (2 years)	27	13.2
	Bachelor's Degree (4 years)	107	52.5
	Postgraduate Degree (Master's/Doctorate)	43	21.1

Note. N= sample size.

3.2.2. Bivariate Analysis

This section introduces the results of the bivariate correlations between the study variables as well as the continuous demographic variables. Correlations analyses for the main, and demographic variables were run separately for males and females due to the dyadic structure of the data. Tables 3.4. and 3.5. show the correlation coefficients of all study variables for women and men, respectively. Table 3.6. shows the correlations for both sexes on the study variables.

Table 3.4. *Correlations of Study Variables for Women*

Variable	1	2	3	4	5	6	7	8	9	10
1. Age	-									
2. Marriage Length	-.12	-								
3. Income Level	.32**	-.09	-							
4. Demand Communication	-.08	-.03	-.19**	-						
5. Withdraw Communication	-.04	.06	-.01	-.02	-					
6. Pitch Variance	.17*	.00	.15*	-.03	.10	-				
7. Intensity Mean	.05	.04	.04	-.12	.11	-.15*	-			
8. Intensity Variance	-.13	.07	.00	.18*	.11	.15*	-.76**	-		
9. Jitter Mean	.21**	-.06	.08	-.22**	.11	.36**	.44**	-.47**	-	
10. Shimmer Mean	.13	-.05	.06	-.18**	.11	.12	.39**	-.51**	.79**	-

*p <.05. **p <.0

Table 3.5. *Correlations of Study Variables for Men*

Variable	1	2	3	4	5	6	7	8	9	10
1. Age	-									
2. Marriage Length	.02	-								
3. Income Level	.16*	-.04	-							
4. Demand Communication	-.06	.09	.03	-						
5. Withdraw Communication	.13	-.03	.14*	-.03	-					
6. Pitch Variance	.11	.06	.06	-.15*	.12	-				
7. Intensity Mean	.06	.05	-.03	-.17*	.06	.19**	-			
8. Intensity Variance	-.02	.06	.06	.11	.15*	-.26**	-.76**	-		
9. Jitter Mean	.16*	.04	.09	-.17*	-.03	.52**	.51**	-.50**	-	
10. Shimmer Mean	.00	-.08	.10	-.23**	-.12	.52**	.47**	-.55**	.72**	-

*p <.05. **p <.01.

Table 3.6. *Correlations of Main Study Variables for All Participants*

Variable	1	2	3	4	5	6	7
1. Demand Communication	-						
2. Withdraw Communication	-.05	-					
3. Pitch Variance	-.15**	.18**	-				
4. Intensity Mean	-.11*	.06	-.02	-			
5. Intensity Variance	.11*	.16**	-.00	-.77**	-		
6. Jitter Mean	-.21**	.05	.47**	.44**	-.44**	-	
7. Shimmer Mean	-.25**	.08	.54**	.25**	-.29**	.68**	-

*p <.05. **p <.01

3.2.3 Paired Samples t-test

Paired samples t-tests were conducted to examine the gender differences on study variables overall and also separately for women's topic and men's topic. Starting with the paired samples t-test results when all study variables were compared between men and women regardless of whose topic was being discussed, significant differences were found in all variables. The difference between women (M = 2.78, SD =1.13) and men (M = 2.47, SD = 0.88) on demand communication behavior was statistically significant, $t(203) = 3.25$, $p = .001$. Similarly, a statistically significant difference was found, $t(203) = -3.59$, $p = .000$, between women's (M = 2.32, SD =0.55) and men's (M = 2.54, SD = 0.82) withdrawal communication behavior. As for the acoustic features, a statistically significant difference was found $t(203) = -11.62$, $p = .000$, between women's (M = 4.36, SD =1.04) and men's (M = 5.98, SD = 1.84) pitch variance. The difference between women (M = 68.23, SD = 2.23) and men (M =67.62, SD = 2.11) on intensity mean score as another acoustic feature was statistically significant, $t(203) = 3.42$, $p = .001$. Another statistically significant difference was found when intensity variance scores were compared, $t(203) = -6.44$, $p = .000$, with men scoring higher (M = 67.73, SD = 20.61) than women (M = 59.80, SD = 18.79). In addition, the jitter mean values as a part of voice quality variables, significantly differentiated $t(203) = -4.13$, $p = .000$, between women (M = 3.13, SD = .51) and men (M = 3.30, SD = .57). Lastly, the shimmer means were statistically different $t(203) = -21.05$, $p = .000$, between women (M = 1.78, SD = .11) and men (M = 1.94, SD = .10).

When gender differences were tested for women's topics, women were rated higher (M = 3.02, SD = 1.17) for demanding behaviors compared to men (M =2.35, SD = .83) while men were rated higher (M =2.70, SD =.93) for withdrawing behavior compared to women (M = 2.30, SD =.63) . And significant differences were found for the pitch variances, intensity variances, jitter mean and shimmer mean values. In detail, men's pitch variance (M=5.93, SD=1.83), intensity variance (M =66.69, SD =21.08), jitter mean (M =3.31, SD =.53), and shimmer mean (M =1.95, SD =.10) values were higher than all women's pitch variance (M=4.39, SD=1.02), intensity variance (M=60.67, SD=19.16), jitter mean (M=3.13, SD=.51), and shimmer mean (M=1.78, SD=.10) values, respectively. There was no statistically significant difference for the intensity means.

When gender differences were tested for the men's topic, contrary to the women's topic, there were no significant gender differences for the communication behaviors whether it be demanding behaviors (*M*=2.54, *SD*=1.06, for women; *M*=2.60, *SD*=.91, for men) or withdrawing (*M*=2.36, *SD*=.46, for women; *M*=2.40, *SD*=.69, for men). However, similar to the findings in the women's topic, men's all pitch variance (*M*=6.04, *SD*=1.85), intensity variance (*M*=68.76, *SD*=20.18), jitter mean (*M*=3.30, *SD*=61) and shimmer mean (*M*=1.94, *SD*=.10) values were higher than all women's pitch variance (*M*=4.33, *SD*=1.07), intensity variance (*M*=58.93, *SD*=18.45), jitter mean (*M*=3.13, *SD*=.52), and shimmer mean (*M*=1.78, *SD*=.11) values. During the men's topic, women's intensity mean values significantly higher (*M*=68.35, *SD*=2.34) than men's intensity mean values (*M*=67.40, *SD*=2.22), for which they were not during their own topic.

3.3. APIM

Individual structure data were converted to dyadic format and each partner was assigned the same identification number as a couple. Thus, the unit of analysis was the dyad. In addition, the pitch values included in the acoustic features represent the same measurement as the fundamental frequency range (f0), which was widely mentioned in the previous chapters. The reason for including measurements as pitch instead of the fundamental frequency range in the analysis results is that the pitch measurement corresponds to our perception of the fundamental frequency range (Bäckström, 2020; Banse & Scherer, 1996). Therefore, pitch is the measurable state of the fundamental frequency range.

APIM analyses were conducted using the Mplus8 software within the structural equation modelling (SEM) framework (Cook & Kenny, 2005; Fitzpatrick et al., 2016; Kenny & Ledermann, 2010; Maydeu-Olivares, 2000). Results are presented below. The unstandardized effect estimates for the basic saturated APIM model are presented in Tables 3.7. and 3.8.

3.3.1 Research Question 1

When the participants' demand communication behaviors on their own voice features (actor effects) were examined for the women's topic, women's demand communication behaviors did not have a significant (b =-.02, p = .053) actor effect on their own shimmer values but men's did (b =-.03, p =.010). Men's own demand communication behaviors were negatively related to their own shimmer values. While men's demand communication

behaviors had no significant effects on their own intensity variance (*b*=2.51, *p*=.317), women's did. Women's demand communication behaviors were positively related to (*b* = 3.84, *p* =.017) their own intensity variance values.

Neither women's (*b* =-.34, *p* =.056) nor men's (*b* =-.45, *p* =.058) demand communication behaviors had a significant actor effect on their own intensity mean values. Conversely, both women's (*b* =-.12, *p*=.007) and men's (*b* =-.15, *p*=.017) demand communication behaviors had significant actor effects on their own jitter mean values. Both women's and men's demand communication behaviors were negatively related to their own jitter mean values. Finally, the demand behaviors of both women (*b* =-.04, *p* = .655) and men (*b* =-.35, *p* =.108) did not have a significant effect on their pitch variance values (See Table 3.7).

For the men's topic, when the participants' demand communication behaviors on their own voice features (actor effects) were examined, demand communication behaviors did not have significant effects on any of their acoustic features for women (See Table 3.8). But for men, their demand communication behaviors were significantly and negatively related to (*b* =-.02, *p* = .042) their own shimmer mean values. Women's demand communication behaviors' effects on their own shimmer mean (*b* =-.01, *p* =.180), jitter mean (*b* =-.08, *p* =.088), intensity variance (*b* =1.48, *p* =.391), intensity mean (*b* =-.08, *p* =.718), and pitch variance (*b*=-.04, *p* =.700) values were not significant. And also, men's demand communication behaviors' effects on their own jitter mean (*b*=-.07, *p*=.298), intensity variance (*b*=1.57, *p*=.473), intensity mean (*b*=-.38, *p*=.106), and pitch variance (*b* =-.23, *p* =.237) values were not significant.

When the participants' demand communication behaviors on their partners' voice features (partner effects) were examined for the women's topic, both women's and men's demand communication behaviors did not have significant effects on any of their partners' acoustic features, for the women's topic. In detail, women's demand communication behaviors' effects on their partners' shimmer mean (*b*=-.01, *p*=.296), jitter mean (*b*=-.02, *p*=.600), intensity variance (*b*=2.18, *p*=.226), intensity mean (*b*=.20, *p*=.246), and pitch variance (*b*=-.20, *p*=.192) values were not significant. Also, the effects of men's demand communication behaviors on their partners' shimmer mean (*b*=-.02, *p*=.065), jitter mean (*b* =-.05, *p*=.447), intensity variance (*b*=.14, *p*=.952), intensity mean (*b*=.09, *p*=.713), and pitch variance (*b*=-.11, *p*=.388) values were not significant, as mentioned above.

For the men's topic, demand communication behaviors of both men and women did not have significant effects on any of their partners' acoustic features except for the shimmer mean values. Women's demand communication behaviors' effects on their partners' jitter mean (*b*=-.02, *p*=.779), intensity variance (*b* =1.09, *p*=.565), intensity mean (*b*=.29, *p*=.152), and pitch variance (*b* =-.30, *p* =.081) values were not significant. The effects of men's demand communication behaviors on their partners' jitter mean (*b*=-.06, *p*=.309), intensity variance (*b*=1.88, *p*=.347), intensity mean (*b*=.06, *p*=.829), and pitch variance (*b*=.21, *p*=.071) values were not significant either. Men's demand communication behavior had a significant effect (*b*=-.03, *p*=.018) on their partners' shimmer mean feature only, but women's did not (*b*=-.00, *p*=.742). Men's demand communication behaviors were negatively related to their partners' shimmer mean values (See Table 3.8).

3.3.2 Research Question 2

When the participants' withdraw communication behaviors on their own voice features (actor effects) were examined for the women's topic, similarly, men's withdraw communication behaviors did not have a significant actor effect either on their own jitter mean (*b*=-.04, *p* =.488) or intensity mean (*b*=.09, *p*=.675) values, but women's did. Women's own withdraw communication behaviors were significantly and positively related to both their own jitter mean (*b*=.22, *p*=.006) and intensity mean (*b*=.84, *p*=.006) values. The only acoustic feature that withdraw behaviors of both men and women had significant effects on were their own shimmer mean values. But while women's withdraw communication behaviors were significantly and positively related to (*b*=.05, *p*=.005) their own shimmer mean values, men's were significantly and negatively related to (*b*=-.03, *p*=.005) their own shimmer mean. Finally, both women's and men's withdrawal behaviors did not have significant effects either on their own intensity variance or pitch variance values (See Table 3.7.).

For the men's topic, when the participants' withdraw communication behaviors on their own voice features (actor effects) were examined, withdrawal behaviors of both men and women did not have significant effects on any of their own acoustic features (See Table 3.8).

For the women's topic, when the participants' withdraw communication behaviors on their partners' voice features (partner effects) were examined, men's withdraw communication behaviors had a significant effect (*b*=-.03, *p*=.012*)* on their partners' shimmer mean values but women's did not (*b*=.03, *p*= .081). Men's withdraw communication behaviors were negatively

and significantly related to their partners' shimmer mean values. Similarly, while women's withdraw communication behaviors did not have significant effects neither on their partners' intensity variance (*b*=.08, *p*=.361) nor intensity mean (*b*=-.14, *p*=.675) values, men's did. Though men's withdraw communication behaviors were significantly and positively related to their partners' intensity variance (*b*=10.04, *p*=.000) values, their withdrawal behaviors were also significantly and negatively related to their partners' intensity mean (*b*=-1.07, *p*=.000) values. On the other hand, there was a significant effect (*b*=1.00, *p*=.000) of women's withdraw communication behaviors on their partners' pitch variance values however this was not the case for the effect of the men's withdraw communication behaviors (*b*=.20, *p*=.078) on their partners' same acoustic feature. Women's withdraw communication behaviors were positively related to their partners' pitch variance values. Lastly, there were no significant partner effects of neither men's nor women's withdraw communication behaviors on each other's jitter mean values (See Table 3.7.).

For the men's topic, when the partner effects of both women's and men's withdraw communication behaviors on each other's acoustic features were examined, there were only two significant effects of men's withdraw communication behaviors on their partners' acoustic features (men to women partner effect). However, no such result has ever been found for women's withdraw communication behaviors on their partners' acoustic features (women to men partner effect). Men's withdraw communication behaviors were significantly and positively related (*b*=8.79, *p*=.001) to their partners' intensity variance, while these behaviors were also significantly and negatively related (*b*=-1.01, *p*=.002) to their partners' intensity mean values. Regarding other acoustic characteristics, neither female to male nor male to female partner effects were found as mentioned above (See Table 3.8.).

Table 3.7. *Basic Saturated APIM: Unstandardized Effect Estimates for Communication Behaviors and Acoustic Features for Women's Topics*

	Estimate	*p*
Actor Effects (DC&Shim)		
Women – *X1 → Y1*	-0.016	0.053
Men – *X2→ Y2*	-0.030	0.010
Partner Effects (DC&Shim)		
Men to women – *X2→Y1*	-0.022	0.065

Women to men – *X1→Y2*	-0.009	0.296
Actor Effects (DC&Jit)		
Women – *X1→Y1*	-0.115	0.007
Men – *X2→Y2*	-0.150	0.017
Partner Effects (DC&Jit)		
Men to women – *X2→Y1*	-0.045	0.447
Women to men – *X1→Y2*	-0.023	0.600
Actor Effects (DC&InVar)		
Women – *X1→Y1*	3.843	0.017
Men – *X2→Y2*	2.514	0.317
Partner Effects (DC&InVar)		
Men to women – *X2→Y1*	0.136	0.952
Women to men – *X1→Y2*	2.175	0.226
Actor Effects (DC&InMe)		
Women – *X1→Y1*	-0.342	0.056
Men – *X2→Y2*	-0.447	0.058
Partner Effects (DC&InMe)		
Men to women – *X2→Y1*	0.092	0.713
Women to men – *X1→Y2*	0.195	0.246
Actor Effects (DC&PVar)		
Women – *X1→Y1*	-0.039	0.655
Men – *X2→Y2*	-0.347	0.108
Partner Effects (DC&PVar)		
Men to women – *X2→Y1*	-0.106	0.388
Women to men – *X1→Y2*	-0.201	0.192
Actor Effects (WC&Shim)		
Women – *X1→Y1*	0.045	0.005
Men – *X2→Y2*	-0.030	0.005
Partner Effects (WC&Shim)		
Men to women – *X2→Y1*	-0.027	0.012
Women to men – *X1→Y2*	0.027	0.081
Actor Effects (WC&Jit)		
Women – *X1→Y1*	0.223	0.006

Men – *X2→Y2*	-0.041	0.488
Partner Effects (WC&Jit)		
Men to women – *X2→Y1*	-0.096	0.081
Women to men – *X1→Y2*	0.132	0.128
Actor Effects (WC&InVar)		
Women – *X1→Y1*	-0.214	0.938
Men – *X2→Y2*	4.461	0.052
Partner Effects (WC&InVar)		
Men to women – *X2→Y1*	10.042	0.000
Women to men – *X1→Y2*	3.077	0.361
Actor Effects (WC&InMe)		
Women – *X1→Y1*	0.841	0.006
Men – *X2→Y2*	0.093	0.675
Partner Effects (WC&InMe)		
Men to women – *X2→Y1*	-1.072	0.000
Women to men – *X1→Y2*	-0.137	0.675
Actor Effects (WC&PVar)		
Women – *X1→Y1*	0.226	0.167
Men – *X2→Y2*	0.035	0.856
Partner Effects (WC&PVar)		
Men to women – *X2→Y1*	0.196	0.078
Women to men – *X1→Y2*	1.000	0.000

Note. DC (*X*) = demand communication behavior, WC (*X*) = withdraw communication behavior; Shim(*Y*) = shimmer mean, Jit (*Y*) = Jitter mean, InMe(*Y*) = Intensity mean, InVar(*Y*) = Intensity variance, PVar(*Y*) = pitch variance as prosodic voice features; subscript *1* refers to women, subscript *2* refers to men; *p* is two-tailed.

Table 3.8. *Basic Saturated APIM: Unstandardized Effect Estimates for Communication Behaviors and Acoustic Features for Men's Topics*

	Estimate	*p*
Actor Effects (DC&Shim)		
Women – *X1→Y1*	-0.014	0.180
Men – *X2→Y2*	-0.022	0.042

Partner Effects (DC&Shim)		
Men to women – *X2→Y1*	-0.028	0.017
Women to men – *X1→Y2*	-0.003	0.742
Actor Effects (DC&Jit)		
Women – *X1→Y1*	-0.082	0.088
Men – *X2→Y2*	-0.069	0.298
Partner Effects (DC&Jit)		
Men to women – *X2→Y1*	-0.057	0.309
Women to men – *X1→Y2*	-0.016	0.779
Actor Effects (DC&InVar)		
Women – *X1→Y1*	1.476	0.391
Men – *X2→Y2*	1.572	0.473
Partner Effects (DC&InVar)		
Men to women – *X2→Y1*	1.880	0.347
Women to men – *X1→Y2*	1.089	0.565
Actor Effects (DC&InMe)		
Women – *X1→Y1*	-0.080	0.718
Men – *X2→Y2*	-0.384	0.106
Partner Effects (DC&InMe)		
Men to women – *X2→Y1*	0.055	0.829
Women to men – *X1→Y2*	0.294	0.152
Actor Effects (DC&PVar)		
Women – *X1→Y1*	-0.038	0.700
Men – *X2→Y2*	-0.234	0.237
Partner Effects (DC&PVar)		
Men to women – *X2→Y1*	0.207	0.071
Women to men – *X1→Y2*	-0.297	0.081
Actor Effects (WC&Shim)		
Women – *X1→Y1*	0.000	0.999
Men – *X2→Y2*	-0.006	0.955
Partner Effects (WC&Shim)		
Men to women – *X2→Y1*	-0.006	0.730
Women to men – *X1→Y2*	-0.005	0.811

Actor Effects (WC&Jit)		
Women – *X1→Y1*	-0.042	0.712
Men – *X2→Y2*	-0.030	0.733
Partner Effects (WC&Jit)		
Men to women – *X2→Y1*	-0.018	0.809
Women to men – *X1→Y2*	-0.064	0.629
Actor Effects (WC&InVar)		
Women – *X1→Y1*	0.548	0.885
Men – *X2→Y2*	1.812	0.533
Partner Effects (WC&InVar)		
Men to women – *X2→Y1*	8.791	0.001
Women to men – *X1→Y2*	4.977	0.252
Actor Effects (WC&InMe)		
Women – *X1→Y1*	0.820	0.090
Men – *X2→Y2*	0.279	0.383
Partner Effects (WC&InMe)		
Men to women – *X2→Y1*	-1.005	0.002
Women to men – *X1→Y2*	-0.576	0.229
Actor Effects (WC&PVar)		
Women – *X1→Y1*	-0.083	0.721
Men – *X2→Y2*	0.384	0.150
Partner Effects (WC&PVar)		
Men to women – *X2→Y1*	0.158	0.305
Women to men – *X1→Y2*	0.077	0.848

Note. DC (*X*) = demand communication behavior, WC (*X*) = withdraw communication behavior; Shim(*Y*) = shimmer mean, Jit (*Y*) = Jitter mean, InMe(*Y*) = Intensity mean, InVar(*Y*) = Intensity variance, PVar(*Y*) = pitch variance as prosodic voice features; subscript *1* refers to women, subscript *2* refers to men; *p* is two-tailed.

CHAPTER 4

DISCUSSION

The research questions addressed in this study were: 1) Is participants' demand communication behavior related to their own and their partners' voice features? 2) Is participants' withdraw communication behavior related to their own and their partner' voice features? However, these two general research questions were also divided into two sub-dimensions according to whose topic was being discussed. In this case, first of all, the outputs of all main variables will be discussed within two research questions according to topics selected. Both research questions, and related sub-dimensions in these questions mentioned, in this study have been addressed from a dyadic perspective examining both actor and partner effects.

Additionally, even though sex differences were not among the research questions of this study, since we conducted dyadic analysis with heterosexual couples, we have explored these differences in our study variables and also in order to better understand the dyadic patterns found in the APIM results.

Starting with the gender comparisons, in general considering the communication patterns regardless of whose topic is being discussed; women in this sample appeared more demanding while men appeared more withdrawing compared to their partners overall. This was also the case when it was the women's topic. However, there was no sex differences for the communication behaviors in the men's topic. This finding is consistent with the majority of studies that have found remarkable polarization in females' topics but not males' (Christensen & Heavey, 1990; Heavey et al., 1993). Accordingly, researchers have found that males and females are not significantly different in either demanding or withdrawing communication behaviors during male-selected topics (Heavey et al., 1993).

Moreover, during women's topics the acoustic features or in other words the emotional indicators of men's voices reflected higher pitch variances, intensity variances, jitter and shimmer values compared to women. But during the men's topic, their own intensity variance and shimmer values were also higher than women's. When all of these findings are considered; men appeared to reflect more emotional arousal as seen in their voice features (emphasis, fluctuations as ups and downs, speed changes) during women's topic in which as mentioned above women were more demanding in the conversation and the men appeared more

withdrawing. While men appeared withdrawn, their emotional indicators as rated in their voice features were aroused. This finding is in line with the escape conditioning model showing that men may withdraw more than women, regardless of who determines the subject of discussion (Baucom et al., 2010). According to this model, males are more inclined to withdraw, as they experience more physiological arousal than women during relationship conflict (Baucom et al., 2015; Gottman & Levenson, 1988). But it is also important to note that during the discussion of the men's topic, one of the women's voice features, which was the intensity mean was higher than men's. Intensity mean shows loudness, the associated ups and downs, and emphasis increased along with it in voice (Eyben, 2015). So this finding may mean that as women raised their voices, they got more empathic and their voices had more ups and downs, against their partners' requests. This finding coincides with the argument in the literature that women's voice intensity decreases more strongly in their own request sentences (Galili et al., 2013).

For the men's topics, the present finding is consistent with some previous studies indicating that there is less emotional arousal during the men's topics than during the women's (Baucom et al., 2010; Christensen & Heavey, 1990; Heavey et al., 1993). During the men's topic, some of the men's voice features including their pitch, intensity variance and shimmer values were also higher compared to women's. During the discussion of their own topics, men also appeared to be emotionally more aroused compared to women.

As regarding the two main research questions, the first striking finding was that even though there were significant actor effects for women's demanding and withdrawing behaviors on their own or their partner's voice features while discussing their own topic, no significant actor or partner effects of women's communication behaviors were found during the discussion of men's topic. This finding is in line with the discussion above suggesting that the problem topics brought by men may be related to less emotional fluctuation especially for women, compared to their own topics (Crenshaw et al. 2021).

4.1. RESEARCH QUESTIONS

4.1.1 Research Question 1

One of the primary findings was that during the women's topic, men's demanding communication behaviors were negatively related with both their own shimmer mean and jitter mean values. These results indicate that as the men's demanding behaviors increased, their jitter mean and shimmer mean values decreased or vice versa. The increase or decrease of the shimmer and jitter features shows that there was no monotony in men's speech during women's

topic discussion, that is, they expressed themselves with emotional and vivid vocalizations and in a speedy manner (Eyben, 2015). So, men in this sample were emotionally aroused during the discussion of their partners' topic while they also appeared more withdrawn and their partners appeared more demanding.

Regarding the actor effects of the women's demanding behaviors during women's topic, they were also negatively related to their own jitter values but not related to their shimmer values Generally, if the jitter mean value increases or decreases, the shimmer mean value will be changed in a similar way, so this finding was unexpected. The jitter mean values can be considered as the changes that occur in short phases in the pitch values of the voice (Eyben, 2015). Consequently, women's own jitter mean values, which are negatively related with the increase or decrease in their demanding behavior, may be interpreted as short-interval fluctuations in their vocalizations pointing to their emotional arousal. In addition the other finding that women's demand communication behaviors were positively related with their own intensity variance values also shows that women expressed themselves with more demanding behaviors such that the dramatization in their voices, and the associated ups and downs, and emphasis increased along with it (Eyben, F., 2015).

These findings generally could mean that for women, in line with gender-related explanations from the socialization perspectives in literature (Heyman et al., 2009; Holley et al., 2010; Jacobson, 1990), when women find a space that they can discuss their own problem topics and request a change, there seems to be an increase in both their demanding behaviors and its reflections on their own vocalization in accordance with their emotional arousals reflected in their intensity variance and jitter values. When men's voice features during women's discussion are considered where women appeared more demanding, men appeared to become more emotionally aroused reflected in their shimmer and jitter values, and so this may be because they perceived this situation as a threat to the current status quo and became more defensive in a more withdrawn manner than normal in order to keep the situation constant. On the other hand, women might have used the discussion conversations as an opportunity they found where they might have become more demanding and thus more emotionally aroused which was reflected in the emphasis, and fluctuations of their vocalizations. This finding is in line with previous findings (Christensen & Heavey, 1990; Heavey et al., 1993; Heyman et al., 2009; Eagly, 1987; Eagly et al., 2000; Jacobson, 1990; Klein & Johnson, 1997; Klinetob & Smith, 1996) suggested in the social structure model that there will be a gender-based polarization in communication behaviors (women demand more because of power imbalance, and over against, men withdraw more). Again, in this context,

this finding comply with the argument in the literature within the scope of the concept of *desire for change* that the person who brings the subject will demand more and his/her vocalization will be affected in parallel with this, but the other partner will also withdraw more (Christensen et al., 2006; Heavey et al., 1993). Within the scope of the results found in this research, women who requested the change became demanders, because the demander is dependent on the respondent to create change within the relationship, whereas the men as respondent, defended themselves by withdrawing to prevent any changes on their own (Christensen & Heavey, 1990; Heavey et al., 1993). This finding is also consistent with both the escape conditioning model that both demanding and withdrawing behaviors are associated with emotional arousal (Gottman & Levenson, 1988; Kiecolt-Glaser & Newton, 2001) and the coercion theory (Baucom et al., 2010) which suggests that men will withdraw in concordance with the severity of their partners' emotional arousal in parallel with their demanding behaviors.

According to the results of some studies in the literature, it is expected that demand communication behaviors for both genders will affect the voice features of their own and their partners' (Baucom et al., 2015). Even though, in the present findings, no partner effect was observed for women's demanding communication behaviors during their own topics, women's demand behaviors were associated with men's communication behaviors and its emotional arousal reflections on their vocal characteristics, in a cyclical way. Because it seems that although there was no women to men partner effect, male partners had actor effects even if their requests were not in question. Accordingly, polarization theory, suggests that emotional arousal and demand/withdraw behavior can affect each other through a combination of interpersonal pathways and described demand/withdraw behavior as a cyclical pattern of interaction in which each partner's behavior occurs as a result of the other partner's behavior (Baucom et al., 2009b, 2011, 2015; Denton, 2001; Heffner et al., 2006; Jacobson & Christensen, 1996; Kiecolt-Glaser et al., 1996; Verhofstadt et al., 2005).

Another sub-dimension of the first research question includes findings on the relationship between the partners' demanding behaviors and their own and their partners' vocal characteristics, during the men's topic. The findings show that increases in the demanding behaviors of men are related to decreases in their own and their partners' shimmer mean values and vice versa, during their own topics. As mentioned above, the negative relationship between the two variables (demand communication behavior and shimmer mean) here shows that the changes in men's demanding behaviors are associated with their emotional vocalizations and changing fluctuation in their speech (Eyben, 2015), as mentioned above. So, men in this sample

were emotionally aroused during the discussion of their partners' topic while they also appeared more withdrawn and their partners appeared more demanding.

Why do women demand more while men withdraw more? And why are women's demanding behaviors' reflections more visible in their vocalizations, contrary to men's? What is it that women demand for? There are many approaches and studies that have tried to explain these questions in their own understanding. In the psychodynamic framework, according to Freud's (1924) theory of the psychosexual development of little girls, the girl realizes that her genitals are not like the boy's penis and concludes that she has lost hers (Downey, 2009). Thus, as Freud said, what women want is the phallic apparatus of men, penis, in simple terms. However, against Freud's phallocentrism, Karen Horney (1926) argued that penis envy is a social phenomenon. In other words, when a woman becomes aware of her anatomical difference, it is not the absence of a penis that makes her feel inferior, it is the symbolic meaning of being different from men. So, according to Horney, what women want is the power, opportunity and resources that men already have. The idea that women's psychological development is inextricably linked with their unequal place in the social structure dominated almost all subsequent reflections on gender research. For Horney, there is no such thing as a woman born; there is a woman constructed by the society (Rich, 1976), just like the idea of women's submissions. And also, Horney (1926) highlighted the men's fear of women. Similarly, Melanie Klein (Grosskurth, 1986) argued that Freud's views of women stem not from women's powerlessness but from men's fear of female power (Berzoff et al., 2021). These desires and fears begin to develop at the age of 18-24 months, when children realize the differences between the sexes. For boys, in this developmental process, gender difference and separation-individuation problems may merge. Because, for the boys, their sexual difference from his mother may appear to them as an isolating separation from her. On the other hand, the desire to merge with her, during the individuation process, may carry new dangers. Being one with her almost threatens the boy's gender identity. The result may be an insecure sense of masculinity undermined by the desire-fear of union and/or a sharply circumscribed and impersonal masculinity that is rigidly separated from femininity. This separation equates with the loss of both desired intimacy and feared identity (Fast, 1990). Lastly, Miller (1976) argues that women are socialized to value intimacy in a relationship, while men are socialized to value independence and autonomy. These different needs can cause women to be more demanding and men to withdraw (Holley et al., 2010). Therefore, all these explanations in the dynamic framework seem to point out the dualities of separation and union, push-pull, distance-

convergence, which are inherent in demand/withdrawal communication behaviors. Another theory that approaches women/men polarization in a similar way with the psychodynamic framework is attachment theory. Attachment theory associates the attachment insecurities to the demand-withdraw communication behaviors. In depth, the women's demand/men's withdrawal polarization can be explained by women's anxiety about abandonment. For example, A woman who fears rejection and is sensitive to any signs of distance from her partner may demand more to keep her partner close. On the other hand, an avoidant man may use more withdrawal strategies to avoid the intimacy demanded (Fournier et al., 2011). Thus, generally anxiously attached partners demand more, while avoidantly attached partners withdraw more (Crowley, 2008).

Finally, if we look at polarization from another perspective, current research explains that men are less demanding due to the fact that also men are more beneficiaries of marriage (Goldman et al., 1995; House et al., 1988; Kaplan & Kronick, 2006; Kiecolt- Glaser & Newton, 2001; Monin & Clark, 2011). In other words, men benefit more from marriage than women because they suffer less from marriage than women in underling positions (Wanic & Kulik, 2011). For example, while women experience more emotional expression, sharing, closeness and support in their external relationships; for men, apart from marriage, there is no other relationship that contains these elements (Monin et al., 2009; Wanic & Kulik, 2011). The status quo in marriages is clearly in favor of men, and so they may have little to gain by engaging in discussions about their partners' requests. Women, on the contrary, may need to use confrontation, demand behavior, and discussions to improve their positions (Monin & Clark, 2011). In sum, the woman demands what she finds outside from her spouse. On the contrary, men generally seem more satisfied and comfortable with their marriage. Another information (Weusthoff et al., 2013a; 2013b) in the literature, consistent with all these explanations, is that it may be more difficult to capture the association between the withdrawal behavior and its reflections in vocalizations compared to the demanding behavior. Therefore, it is easier to catch the changes seen in women's vocalizations compared to the vocalizations that male partners do not show during withdrawal, since it is usually the female partner who is more demanding and more wants change.

4.1.2. Research Question 2

The first finding within a sub-dimension of the second research question was that significant relationships were mostly found between women's demanding behaviors and their

own vocal characteristics (actor effect), and between men's withdrawing behaviors and their partners' vocal characteristics (partner effect), for the women's topics.

During the discussion of women's topic, while women's withdraw communication behaviors were positively related with their own shimmer values, men's were negatively related with their same vocal property. In other words, as women withdrew in the discussion of their own topic, their speed of speech and emotional reflections in their voices increased. However, while discussing women's topic, as men withdrew, the emotional arousal signs in their vocalizations decreased and they spoke in an undertone. Moreover, the increase in men's withdrawal behavior have negatively affected the emotional arousal levels of their female partners' and even have made them speak undertone, similarly evident in the significant partner effect mentioned before. This finding is unexpected, because it is not consistent with the arguments that during the women's topics, men's higher withdrawal communication behaviors were associated with their partners' higher level of vocally-encoded emotional arousal (Baucom et al., 2015).

During the discussion of women's topic, considering the partner effects while women's withdrawing behaviors were positively associated with their partner's pitch variance, men's withdrawing behaviors were associated negatively with women's shimmer mean and intensity mean values, but positively with their intensity variance. So, here we were able to measure women's emotional arousal as evident in the changes in their shimmer, intensity variance and intensity mean values as their partners withdrew in discussing women's own topic.

During women's topics as women withdrew more, their jitter mean, and intensity mean values also increased. These findings indicate that in line with the women's increasing withdrawing behaviors, their emotional arousal reflections in their speech increased and they might have spoken more dramatically and empathically. Also men's withdraw communication behaviors were negatively related with women's intensity mean values which means that the emphasis in women's speech decreased and they dramatized their speech in a more silent way as the men withdrew more, during the women's topics. However, in the next finding, as men withdrew more, women's intensity variance values increased, which indicates an increase in the dramatization of women's speech, contrary to the previous finding. Although these findings seem to conflict with each other, it is actually another expected situation. As mentioned above, while expressing their own desires, women experience more emotional arousal as a result of the withdrawal of male partners, and this intense arousal is reflected in their voice intensity variances. Because, higher intensity is associated with higher value, higher tension, and energy (Ilie, & Thompson, 2006). If we consider these findings together, as the women withdrew, the

dramatization reflections in their voices increased significantly; but when their male partners withdrew, the women dramatized their speech again, but did it more quietly and maybe without the emphasis.

In the next finding, while discussing their own topics, the increase in women's withdrawal was associated with the increase in their partners' pitch variance values and vice versa. As indicated in the literature, pitch variability depends on how well someone breathes throughout the speech (PitchVantage, 2020). With the breath taken during the pause, the lungs are filled with more air, which, as in the present finding, results in greater pitch variance and stronger sound projection by the talker. Based on this information, it can be said that during the women's topics, as women withdrew more, the more men felt the need to pause, and as a result, they returned to the discussion in a louder tone of voice, tried to defend themselves in an even higher pitch and perhaps more energetically used their vocalization to get their partners back into the discussion.

For the men's topics, as males withdrew more, while their partners' intensity variance values increased, their partners' intensity mean values decreased, similar to the associations during the women's topics. As mentioned above, these findings indicate that the more men withdraw while discussing their own problem topics, the dramatization and emphasis in their partners' speech increased at the same rate and therefore their partners were more emotionally aroused and made their speech more dramatic but in a silent way. This finding coincides with previous research that, regardless of whose topic is being discussed, men's withdraw communication behaviors were associated with their partners' increasing vocally-encoded emotional arousal levels (Baucom et al., 2015). On the other hand, for the men's topics, no relationship was found between the men's withdraw communication behaviors and their own vocalizations. While the men's withdrawal during their own subject is associated with the changes in their partners' vocalizations; there is no association with their own vocalizations.

If the same-sex couples constituted the sample of the study, we can predict that if one of the spouses is more willing to change than the other one, then these partners will be polarized in their communication behaviors regardless of genders. Because the occurrence possibility of polarization for any gender (man/woman) or couple type (cross-sex or same-sex) depends on the concept as *desire for change* (Eldridge & Christensen, 2002; Heavey et al., 1993). In detail, the partners who desire change via their discussion topics is in a low-power position, because they rely on their partner's compliance and engagement to elicit change. Generally, the requestee try to do it by demanding, complaining, using their vocalizations, or nagging. Conversely, the other partner is in a high-power position, and able to preserve the status quo

by withdrawing from discussions. From this point of view, neither genders nor couple types are not essentially different, but their socially constructed behaviors are. For example, some studies show that if both same-sex and cross-sex couples are included, there may be differences in polarization depending on who wants the change. For cross-sex couples, more polarization is found when women rather than men choose the subject, while for same-sex couples, only the desire for change may be associated with polarization, regardless of who requested the change (Baucom et al., 2010; Holley et al., 2010).

4.2. IMPLICATIONS AND RESEARCH CONTRIBUTIONS

The findings of this study highlighted the compatibility of partners' invisible vocal characteristics with their visible behaviors, as indicators of their emotional arousal during their interactions, for the current sample. Thus, these further demonstrated the importance of voice parameters as partners' non-verbal clues of their spoken messages as indicated in many studies before (Baucom et al., 2009a; Black et al., 2010; Chakravarthula et al., 2015; Georgiou et al., 2011; Gottman et al., 1997; Lee et al., 2014; Xiao et al., 2013). These results contribute to developing a more holistic picture of being able to make sense of how a couple interacts during the discussion of any relational problem, both in a more observable form and in a more invisible context that may be overlooked at first glance.

The effort of gender-based stereotyping of communication behaviors, which has been questioned in the literature up to now and handled in a contradictory manner by different models, has been validated by the present results and has contributed to the research literature. Because, as mentioned in the discussion section, there was gender-based polarization for demand and withdraw communication behaviors (while women demanded more, the more men withdrew), for women's topics. Accordingly, the other important finding is that the polarization in both communication behaviors and its vocal reflections as emotional arousal indicators change in terms of the differentiation of selected topics. And also, the findings show that both gender's withdraw communication behaviors were associated with a wide range of acoustic features of their partners compared to the demand communication behaviors. In general, both demand/withdraw communication behaviors and emotional arousal seem tightly linked to each other as indicated in a study this linkage continues to appear in empirical research, clinical case studies, and couple therapy guidelines (Wile, 2013).

The results of the study also indicate that not only their own vocalization with their communication behaviors, but also their partner's vocalizations and behaviors are also related

with each other. In this respect, despite the argument that communication behaviors of individuals can only be considered within the scope of their individuality, as included in some studies (Miller, 1976), the findings regarding the partner effects supported that these behaviors interact with other partner's in a reciprocal and cyclical way (Leo et al., 2020). Therefore, within the context of the cyclical and holistic perspectives that form the basis of couple therapy, the aforementioned findings gain valid and valuable meanings again in theoretical and also in clinical sense.

In terms of methodology, the self-reports and observational techniques used to examine these related variables have some limitations that affect both research and clinical assessments, and that is reflective of the current state of psychometrics (Baucom et. al, 2011; Parra et. al, 2017), as mentioned in the theoretical framework section. Therefore, the method used which is to make sense of observational data and voice analysis together as it is included in this study, has presented a creative and innovative tool for the use of professionals in the clinical field. Thus, and so, most importantly, audio-encoded emotional arousal measurement can be perceived by the listener, unlike blood pressure or heart rate as indicated by Baucom et al. (2011). While working with couples in couple therapy processes, sometimes, not only observing them, but also listening to them and to what they say with another ear, besides the meaning of what they say, will contribute to the process.

The couples that constituted the sample of the present study are non-clinical and newlyweds. Therefore, it is a matter of curiosity within the scope of current research how both the aforementioned polarization and partners' relationship satisfactions may vary. There might be also possible effects of the sample being older couples or clinical couples. For example, some studies in the literature indicate that clinical couples and older couples show higher polarization contrary to both newlyweds and the non-clinical couples (Holley, 2010).

In detail, if the current research had been conducted with clinical couples, our findings would be expected to be in the direction of more insecure attachment, more polarized communication behaviors, and lower relationship satisfaction (Bouchard et al., 2009). Similarly, the findings of these arguments for older couples can be expected, based on the literature, that there will be more polarized communication behaviors for both spouses, but this polarization will not significantly affect their relationship satisfaction (Baucom et al., 2010).

As another clinical implication is that the couples' communication behaviors during the discussions actually points to their physiological connection with each other, both at the

observable and more implicit levels. In other words, romantic partners are in a way connected with each other through their physiological arousal levels (Butler, 2011). This connection, which can be called as co-regulation or synchronization, expresses the joint variability between the two partners and is associated with other variables such as relationship satisfaction (Timons et al., 2015). For example, one partner's negative affects may be accompanied by increases in their own physiological arousal that lead to also increased arousal in the other partner. In this context, individuals who engage in withdrawal behavior may actually be overly active and trying to down-regulate their response. The physiological connection in this context may be related to distressed relationship functioning, especially if such a connection is recurrent and chronic. Such demand/withdraw communication behaviors may be a mechanism by which physiology is transferred between romantic partners (Timons et al., 2015).

The destructiveness of the transference between the partners can be reduced if the negative emotions, attachment insecurities and physiological stimulations transferred between the partners are reduced to an average level by the couple therapist and worked while keeping them there. Because low and high levels of this type of synchronization are associated with lower relationship satisfaction, and also moderate levels synchronization is associated with higher relationship satisfaction. Too little synchronization may mean physiologically out of sync, on the contrary, too much connection may cause partners to become overly reactive, and direct the conflict to escalate (Timons et al., 2015). Through EFT (Byrne et al., 2004), PACT (Tatkin, 2020), mindfulness-based (Gillespie et al., 2015) psychobiological and attachment-based interventions, attachment bonds within the couple can be reestablished and dysfunctional reciprocities can be replaced by more harmonious interaction patterns.

The results of the present study invite the couple therapist, as a viewer and listener member, to observe the partner interaction over long periods of time and to examine the transmission of verbal and somatic micro behaviors as if watching a play, just like the aforementioned therapy approaches.

4.3. LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The nature of the sample could be considered as the first limitation of the present study. Since the participants were newlywed and of the non-clinical sample, the findings do not make

it possible to generalize exactly to couples that may be encountered in the clinical field and to all types of couples in Turkey. Nevertheless, as mentioned before, demand/withdraw communication behaviors emerge as a common relationship interaction style among clinical couples who seek therapy (Eldridge et al., 2007; Johnson & Zuccarini, 2011; Klinetob & Smith, 1996). In other respects, demand/withdraw communication behavior as a main variable in this study, is not only in heterosexual couples; it is also known to occur in homosexual couples also (Holley et al., 2010). Perhaps including homosexual couples in the sampling in future research will provide more data to confirm the findings. And also conducted a study addressing these links with a larger sample size may enlighten on the importance of the effects and provide more power.

As another limitation, keeping the voice parameters examined within the scope of the present study as wide as possible made this research and its findings the one of the rare studies in the couple therapy literature in Turkey, but at the same time, it made it disadvantageous and limited in terms of the absence of studies that could be taken as a guide during the thesis process.

This thesis aimed to explore the couples' communication behaviors and their vocal parameters as emotional arousal indicators, mainly from a systemic perspective. In this respect, cultural sensitivity and the fact that other parameters of both partners and their relationship as a third one were not included in the interpretation of the analysis results can be stated as another limitation. The only exception was gender-based explanations while interpreting the results. Since the expected perspective takings and interactions of both partners' communication behaviors could vary between cultures in Turkey, cross-cultural studies would be beneficial in the future.

Another curiosity is what kind of change will occur in both the communication behaviors and the associated vocalizations of the partners during the discussion within the span of a interaction period. Little is known about the temporal dimension of demand/withdrawal behavior, although for some couples, it seems possible that demand-withdrawal behaviors occur more quickly or last longer. Although coercion theory suggests that demanding behaviors will increase unless the desired change is granted, and withdrawal behaviors will likewise change to resist increased demands, also a study (Baucom et al., 2010) found evidence of temporal polarization only for demanding behaviors. In the same study, as another dimension, it was also found that same-sex couples started their conflict discussions less destructively (Gottman et al., 2003). This finding may imply that same-sex couples will show more micro-

increases in their demand-withdrawal behaviors during their interactions, contrary to cross-sex couples. Therefore, it may be important for future research to look at what happens over time during the discussion topics.

Last but not least, to put also the contents of the topics that partners selected for the discussion under the microscope, will also be useful in making sense of both the behavioral similarities or differences conjunction with their reflections on individuals' vocalizations according to the importance of the subject during the couple's interactions. Likewise, analyzing the textual content of the couple's speech in the form of lexical analysis together with vocal analysis may make the present results even more meaningful in the feature. Because as cited by Markel et al. (1973), speech consists of both textual information and vocal properties.

4.4. CONCLUSION

The present study is one of the few studies in the couple therapy field that explored the relationship between couples' communication behaviors and their voice features as emotional arousal indicators during their problem discussions. The main purpose of the study was to explore and provide empirical evidence for the potential relationship between these variables in the dyadic concept. As a matter of fact, the partner effects of the variables in the findings are, since they are expected to be found less frequently than the actor effect in studies conducted in a dyadic context, of great importance for the purpose of the study.

The results indicate the significance of considering the relationship between partners' communication behaviors and their acoustic features as emotional indicators. This study provides comprehensive clues for couple therapists when assessing the relationship dynamics of a married heterosexual couple in disguised way. In short, these findings help combine the observable and invisible elements that can be noticed when carefully listened.

Examining the effect of both actor and partner effects between two main variables in current study is thought to contribute to the existing research literature because it shows the reciprocity and circularity in the couple interaction.

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APPENDICES

Appendix A: Demographic Form in Turkish

1. Cinsiyetiniz: [ ] Kadın [ ] Erkek
2. Yaşınız: _____
3. Toplam kaç yıl okula gittiniz: _____ Yıl
4. En son bitirdiğiniz okul aşağıdakilerden hangisidir:

[ ]	Okuma-yazma bilmiyorum
[ ]	İlkokul
[ ]	Ortaokul
[ ]	Lise
[ ]	Yüksek Okul (2 yıllık)
[ ]	Üniversite (4 yıllık)
[ ]	Yüksek Lisans veya Doktora

5. Mesleğiniz: _____

6. Çalışma durumunuz:

[ ]	Çalışıyorum
[ ]	Çalışmıyorum
[ ]	Diğer *(lütfen belirtiniz):*

7. Ne kadar süredir evlisiniz: _____ Yıl _____ Ay
8. Evlendiğinizde kaç yaşındaydınız: _____
9. Evlenmeden önce eşinizle birbirinizi ne kadar süredir tanıyordunuz:____Yıl ___ Ay
10. Eşinizle nasıl tanıştınız:

[ ]	Aile aracılığıyla
[ ]	Görücü usulüyle

[ ]	Arkadaş aracılığıyla
[ ]	Okulda/iş yerinde
[ ]	Eğlence mekânlarında
[ ]	İnternette
[ ]	Diğer *(lütfen belirtiniz):*

11. Ailenizin ortalama toplam aylık geliri aşağıdakilerden hangisine en yakındır:

[ ]	850 TL ve altı
[ ]	851 TL – 1500 TL
[ ]	1501 TL – 3000 TL
[ ]	3001 TL – 5000 TL
[ ]	5001 TL – 7500 TL
[ ]	7501 TL ve üstü

I. ETHICS BOARD APPROVAL

Ethics Board Approval is available in the printed version of this dissertation.