My program of research investigates emotional and behavioral processes in romantic relationships that are related to the well-being of individual partners and to the health of the relationship. Within this broader scope, my research focuses on three related aims: 1) identifying dysfunctional processes during couple conflict, 2) studying interventions designed to reduce risk for engaging in dysfunctional processes, and 3) developing methods for assessing and characterizing couple interaction processes. I outline my work and plans for future research in these areas below.

Dysfunctional couple conflict processes

One of the most well replicated findings about couple interaction is that the way conflict is handled is far more important for individual and relational well-being than the occurrence of conflict itself. Although conflict is often assumed to be problematic, conflict can facilitate adaptation and is one of the primary mechanisms by which change and reorganization take place. Conversely, dysfunctional conflict processes are linked to a host of negative psychological, physical, and relational sequelae. The central premise of my research on dysfunctional conflict processes is that there are individual differences in emotional sensitivity to conflict, and that partners are motivated to reduce aversive emotional activation. However, attempts to do so often have unintended consequences that maintain dysfunctional processes and promote maladaptive outcomes. I describe theoretical and empirical bases for this hypothesis and set out a related research agenda in a recent chapter on polarizing relationship processes (Baucom & Atkins, 2012).

My research examines links between emotion and a specific form of behavior during couple conflict known as the demand/withdraw interaction pattern. Demand/withdraw behavior (DWB) refers to a cycle of behavior where the demander nags, criticizes, or complains in an attempt to create change, and the withdrawer quickly ends discussion or refuses to discuss change in an attempt to maintain the status quo. I focus on this specific pattern because it is one of only two forms of behavior (negative reciprocity being the other) that reliably distinguishes well-functioning couples from distressed couples; high levels of DWB are common among couples presenting for therapy, and high levels of DWB are associated with extreme forms of relationship dysfunction such as infidelity and intimate partner violence as well as adverse individual outcomes (e.g., depression, anxiety, and substance abuse).

As I describe in review chapters on marital communication (Baucom & Eldridge, 2013; Eldridge & Baucom, 2012), the escape conditioning model (Gottman & Levenson, 1988) suggests that a withdrawer’s behavior is motivated by an attempt to lower his or her own aversive arousal resulting from the conflictual interaction. Although this model has strong intuitive appeal and continues to be used as a basis for intervention strategies in couple therapies, there is scant empirical support for the model. I have conducted a series of studies that are consistent with a growing body of research suggesting that the association between DWB and emotional arousal is not well characterized by the escape conditioning model. In our first study, we found demanders rather than withdrawers to be more sensitive to couple conflict (Baucom, Atkins, Eldridge, McFarland, Sevier, & Christensen, 2011). A follow-up study found that not only are demanders more sensitive to conflict than withdrawers, but also that withdrawing behavior is more strongly linked to the other partner’s emotional arousal than it is to the withdrawer’s own arousal (Baucom, Dickenson, Atkins, Baucom, Fischer, Weusthoff, Hahlweg, & Zimmerman, under review). We integrate this collection of findings with other work on emotion and demand/withdraw behavior in our interpersonal process model of demand/withdraw behavior which proposes that demand/withdraw behavior and both partner’s emotional sensitivities are linked in a reciprocal, reinforcing cycle (Baucom et al., under review). This model provides a new understanding of demand/withdraw behavior and emotion, and its dyadic, cyclical perspective on the nature of the phenomenon provides a richer conceptualization and fuller description than previous models.

Current and future research on dysfunctional couple conflict processes

I plan to continue developing the interpersonal model of DWB by incorporating a broader range
of relationship salient emotional processes in future research. While initial empirical support for the modeling is compelling, theory and empirical evidence suggest that a number of intra- and interpersonal emotional processes, such as emotion regulation, physiological and subjective reactivity, and empathy, are likely to be involved in DWB. Data for these purposes will come from a series of studies that are in various stages of readiness and planning. Most proximally, I am currently conducting two parallel studies of couple conflict, one of which is funded by a University Seed Grant. Additionally, I am Co-I on a recently begun, NICHD funded study of young adult couples being led by Gayla Margolin at USC. Finally, I received a Junior Faculty Leave Award for Spring, 2015 to develop and submit a grant to NSF in collaboration with Sheila Crowell, Matthew Goodwin (Northeastern University), Panos Georgiou (USC), and Shri Narayanan (USC) based on pilot data from my Seed Grant funded study.

*Interventions for dysfunctional processes*

In addition to my observational work on dysfunctional interaction processes in romantic relationship, I conduct translational research aimed at developing and evaluating interventions that are grounded in well researched cognitive-behavioral models of relationship distress. The bulk of my work in this domain focuses on two couple therapies, Behavioral Marital Therapy (BMT) and Integrative Behavioral Couple Therapy (IBCT). As I describe in overview chapters written for researchers (*Baucom & Christensen, 2005; Baucom, Yi, & Christensen, 2006*) and clinicians (*Baucom, 2011*), both treatments include intervention strategies to interrupt dysfunctional behavioral processes, such as DWB, as a major component of improving overall relationship functioning despite being rooted in different etiological models of relationship distress.

In contrast to the wealth of research on BMT establishing it as an empirically supported intervention for relationship distress, IBCT is a more recently developed couple therapy. My work has helped to evaluate the long-term efficacy of IBCT, to determine pre-treatment characteristics of spouses and couples associated with longer-term response to treatment and to elucidate several theoretically derived mechanisms of change. Our work suggests that IBCT is highly effective treatment for improving relationship distress and that it compares favorably with BMT for both short- and long-term outcomes (*Christensen, Atkins, Baucom, & Yi, 2010*). Similar to the positive effects on relationship satisfaction, my recent work finds that both IBCT and BMT result in significant decreases in demand/withdraw behavior (*Baucom & Christensen, in progress*) and emotional reactivity (*Baucom, Sheng, Christensen, Georgiou, Narayanan, & Atkins, under review*). This collection of results in concert with a broader body of research strongly supports the efficacy of IBCT for improving overall marital functioning and for decreasing dysfunctional conflict processes (e.g., demand/withdraw and emotional reactivity).

Building on theory suggesting that strong emotional reactivity and dysfunctional conflict processes are core components of relationship distress (*Baucom & Atkins, 2012*), I conducted a series of studies to evaluate whether pre-treatment levels of these processes predict long-term treatment outcomes as well as whether changes in these processes are mechanisms of change. Convergent results across several studies demonstrate that emotional reactivity is a robust predictor of response to treatment (*Baucom, Atkins, Simpson, & Christensen, 2010; Hogan, Atkins, Christensen, & Baucom, in preparation*) and that both emotional reactivity (*Baucom et al., under review*) and DWB (*Baucom & Christensen, in progress*) are important mechanisms of change.

**Current and future research on interventions for dysfunctional processes**

I plan to continue advancing this line of research by investigating preventative interventions for relationship distress, couple-based interventions for psychopathology and for physical health conditions, and a meditation-based intervention for relationship ambivalence. These plans include collaborations with researchers at the University of Utah as well as those at other universities in the United States and abroad. Bert Uchino, Tim Smith, Kathy Light, and I recently submitted an R01 to fund a study of a
Loving Kindness Meditation intervention for relationship ambivalence. I am collaborating with Kurt Hahlweg and Tanja Zimmerman at the University of Braunschweig in Germany, Donald Baucom at the UNC-Chapel Hill, and David Atkins at the University of Washington on DFG (the German equivalent of NIH) funded cross-cultural studies of preventative interventions for relationship distress and of couple-based interventions for coping with breast cancer. I am a consultant on an NIMH funded R01 of a couple-based intervention of Anorexia Nervosa led by Cindy Bulik and Donald Baucom at UNC-Chapel Hill. Finally, I am collaborating with Melanie Fischer and Donald Baucom at UNC-Chapel Hill on recently begun studies of couple-based intervention for Obsessive Compulsive Disorder. This collection of plans provides a spring board for extending my work on couple interventions for relationship distress to couple-based interventions for individual physical and mental health outcomes. In addition, it provides an opportunity to expand my basic research on dysfunctional conflict processes by examining links with a wider range of individual and relational well-being outcomes.

**Methodological development in the assessment and characterization of interaction processes**

My basic and applied research on behavioral and emotional processes is heavily reliant on measuring emotion and behavior as they occur while partners interact. Current gold standard methods for acquiring these data have produced a wealth of invaluable findings; however, these methods are also subject to a number of substantial limitations including compromised ecological validity, being time and resource intensive, and being limited in scalability. To overcome these limitations, I have developed a line of interdisciplinary research (involving collaborations with electrical engineers, computer scientists, and health informatics researchers) that applies signal processing and machine learning techniques to the study of couple interaction in both laboratory and real life settings. These efforts have produced a number of methodological and statistical advancements that not only increase the reliability, precision, and efficiency of studying couple interaction but also that open up entirely new possibilities.

One emphasis in this line of research is the application of speech signal processing techniques to the study of emotional arousal during couple interaction. Speech signal processing refers to using computer algorithms to quantify aspects of speech sound waves that communicate information, such as emotion. My work focuses on fundamental frequency (f₀), which refers to the lowest frequency harmonic and is highly correlated with perceived pitch. Building on a series of psychometric and substantive studies (Baucom, et al., 2009, 2011, 2012, in press, under review; Kliem et al., under review; Weusthoff, Baucom, & Hahlweg, 2012), I have written methodological overview journal papers (Weusthoff, Baucom, & Hahlweg, 2013), book chapters (Baucom, 2010; Atkins & Baucom, in press), conference proceedings (Baucom & Iturralde, 2012) and newsletter articles (Baucom, 2009; Baucom, Atkins, & Christensen, 2010) and have additionally given numerous conference presentations (e.g., Baucom, Iturralde et al., 2012) and invited addresses in the United States and Europe (Baucom, 2010, 2012) to introduce couple researchers to f₀ in specific as well as to speech signal processing more broadly. It has been incredibly gratifying that several senior researchers from the United States (Howard Markman at the University of Denver and Rick Heyman at New York University), Europe (Kurt Hahlweg at TU-Braunschweig and Guy Bodenmann at the University of Freiburg), and Australia (Kim Hahlford at Queensland University) have sought out opportunities to collaborate with me in applying these methods to their existing data and to incorporate them into grant submissions. In partial response to these collaboration opportunities, I, along with Kurt Hahlweg and Dave Atkins, received funding from the Volkswagen Foundation to host an all expenses covered, week-long skills building workshop on signal processing and machine learning methods for 60 couple researchers and psychotherapy process researchers from around the world in summer 2014 in Heidelberg, Germany.

A second emphasis in this line of research is automating observational coding methods for quantifying partner’s behavior during interaction. This research involves developing computer algorithms that use f₀ plus a wide range of additional vocal and linguistic features to predict trained
raters’ observational codes (e.g., Black et al., 2011; Rozgic et al., 2010). This work makes technical contributions in the signal processing literature and opens new possibilities for the study of couple behavior during real life. As part of my University Seed Grant funded research, we are collecting continuous audio samples from both partners for up to 10 hours per day during their daily lives. These methods make the otherwise infeasible task of quantifying behavior during such long recordings not only possible but efficient and reliable. These methods answer calls made by couple researchers over the past two decades for developing methods to enable the study of couple interaction during real life.

A final aspect of this line of research is to extend these methods to the study of other forms of dyadic interaction such as psychotherapist-client and parent-child. Within the psychotherapy process domain, I have recently collaborated on a project applying these methods to the study of Motivational Interviewing with Zac Imel at U of Utah (Imel et al., 2014) and am collaborating on projects of risk for suicide in the military with Craig Bryan at U of Utah and clinic based intervention for anxiety and depression with Kurt Hahlweg at TU-Braunschweig. Finally, I am collaborating with Sheila Crowell at U of Utah and Howard Markman at the University of Denver on separate projects applying these methods to parent-child interaction. Applying these methods to a range of dyadic interaction contexts provides a valuable opportunity to improve the robustness of the methods as well to test substantive questions about commonalities and unique aspects of interaction processes for different types of relationships.

**Current and future research on methodological development**

I plan to continue advancing this line of research through continued methodological development as well as additional application to basic and applied research. Panayiotis Georgiou, Shrikanth Narayanan (both at USC), and I are planning to submit an R01 to the National Institute of General Medical Sciences at NIH to develop a software package to automate observational coding for dyadic interaction with an emphasis on couple conflict. Additionally, I have received a Junior Faculty Leave Award for Spring, 2015 to use the pilot data collected from my Seed Grant to develop a grant submission targeted for NIMH. Finally, I am collaborating with Brian Doss at the University of Miami and Andrew Christensen at UCLA on extending these methods to provide couples participating in an online adaptation of IBCT with near real time information about their behavior during interactions collected over the internet.

**Summary**

In sum, my three inter-related lines of research are each progressing and producing valuable substantive and methodological contributions. I have active projects in all three lines, have current research funding for my basic line of research, and am pursuing separate funding opportunities for all three lines of research. It has been highly gratifying to lead my own program of research while also having opportunities to collaborate with colleagues within and beyond psychology. I am excited about my on-going work and the plans I have to continue this work in the future.