Introduction

Ashley K. Randall and Dominik Schoebi

When we ask people to describe their close personal relationships, they often tell us how their relationship affects them emotionally. They tell us how returning home to their parents makes them feel safe and loved, what a great time they had with their friends, or how their partner makes them feel happy and good about themselves. Sometimes they tell us how vacationing with their parents and siblings gets on their nerves, how spending time with friends makes them feel inferior, or how their partner makes them anxious because they do not communicate with them throughout the day.

Searching the internet for combinations between personal relationships terms (e.g., mother, father, friend, partner, spouse) and emotion words (e.g., happy, angry, sad), further emphasizes the connection between these two concepts (google.com, August 2017). For example, searching for combinations between the terms "partner," "husband," or "wife" and "happy" yields between 192 and 206 million hits. The terms "mother" or "father" yield 65 million hits when combined with "angry," and 215 (mother) and 172 million (father) hits when combined with "happy." Furthermore, "best friend" yields 73 million hits when combined with "happy," and between 22 and 25 million when combined with negative emotion words. Theory and research on emotion (Oatley & Jenkins, 1996), and the clinical field on emotional dysfunction (Mennin et al., 2007), acknowledge the key role of close relationships both in scientific work and clinical applications.

The emerging study of interpersonal emotion dynamics

The role of emotions for relationship development and functioning has long been recognized and fueled important advances in relationship research (Bradbury et al., 2000). Furthermore, social factors have been a major focus in affective sciences (see Chapter 1). Emotional interdependence is arguably one of the most defining features of close relationships (e.g. Sels et al., 2016), and considered a key criterion for individuals to evaluate the bonds with another person as close or

intimate. Irrespective, comparably little attention has been devoted to the connection among two or more individuals' emotional experiences as they fluctuate across time.

Over the past three decades, however, a small but growing body of literature focusing on aspects of interdependent emotional change between two or more individuals – interpersonal emotion dynamics (IED) – has accumulated. This work has grown mainly in the slipstream of more firmly established lines of research, and is scattered across several scientific literatures and disciplines, such as social psychology, health psychology, clinical psychology and development psychology, social neuroscience and health sciences. An important driving factor in this work has been the development of sophisticated methods that produced the type of data necessary to investigate interdependent emotional change across time, that is, intensive longitudinal measures of emotions from more than one relationship member, collected either in daily life or in the laboratory (e.g., Bolger & Laurenceau, 2013; Mehl & Conner, 2011). Examples include studies on stress spillover (Bolger et al., 1989; Repetti, 1989) and emotional transmission (e.g., Larson & Almeida, 1999). Another factor that has advanced the field has been methodological refinements and the growing accessibility of analytic methods offering opportunities to utilize intensive longitudinal measures (e.g., multilevel modeling, and models for dyads and families; Kenny et al., 2006). This has produced empirical studies on IED and some of the few conceptual contributions (see Butler, 2011). Based on the chapters of this book, we believe the field is now at a point where integration of theory and methodological approaches, along with an expanded analytic toolbox for advancing our understanding of IEDs in close relationships and associated outcomes, offer evidence that an increasingly more coherent literature is developing.

Promises and challenges of studying interpersonal emotion dynamics

If emotions evolved to facilitate adaptive responses to need-relevant situations, then they must be dynamic: they need to change across situations as function of the presence and nature of situational demands and opportunities (e.g., Niedenthal & Brauer, 2012). The study of emotional dynamics thus becomes an important window into individuals' adjustment processes when navigating their daily life, or during specific situations that pose adaptive tasks. Studying emotional change thus offers insight into a person's adaptation *processes*, rather than their momentary *state of adjustment* in given circumstances at a particular point in time.

A person's experienced adaptive challenges and their outcomes, including threats and opportunities, often originate in the relationship, or are likely relevant to the person's close relationship partner (e.g., parent, peer, or romantic partner) when originating outside the relationship. Therefore, the study of IEDs can be highly informative about the role and provisions of relationship processes for individual adjustment of its members (Schoebi & Randall, 2015). Moreover, by distilling information about the individual's adaptive processes independently of the type of situation, challenge or context in which they emerge, emotional information can serve as a "lingua franca" or "global currency," which benefits research based on heterogeneous samples of adaptation relevant episodes (e.g., daily life data or interaction tasks in laboratory settings). Yet the study of IEDs is also highly challenging, as it is a multilayered and multidimensional study object. Emotions involve different tones and intensities of subjective experience, and different channels at variable levels of consciousness (Scherer, 2005). Emotional change inherently involves a temporal dimension, with different emotional tones and different emotion channels varying in their characteristic rate of change. In addition, these dimensions and layers occur in two or more individuals living in unique relationships, and are connected in many different ways, producing a range of complex patterns of IED (Butler, 2011). The demands posed by the study of IEDs for research methods and analytic tools, and for theory for theory, are thus particularly high. The chapters of this book give evidence of this complexity, and, although non-exhaustive, cover a broad range of dimensions of interpersonal emotional experience in close relationships.

Plan of the book

The goal of this book was to bring together knowledge on the study of IEDs in close relationships across the life-span. In developing this volume, we thought to include scholars who would bring together recent advances in the conceptual, methodological, statistical, and empirical underpinnings to understanding IEDs within personal relationships, as well as offer important directions for future research. As various conceptualizations of IEDs exist (see Butler & Randall, 2013), each contributor provides their conceptualization of IED, as informed by their review of the literature and conceptual perspective.

In Chapter 1, we provide an overview of major theories and models that lend themselves to studying IEDs. We also present the *Situation-Context-Person Framework of Interpersonal Emotion Dynamics (SCOPE)* to

help contextualize IEDs based on situational, contextual, and personal factors. Central to all relationships across the lifespan, Chapter 2 provides a general framework for capturing IEDs, and their associations with relational and emotional adjustment. Sels, Ceulemans, and Kuppens illustrate four key characteristics of IEDs, specifically *emotional covariation, emotional influencing, emotional variability* and *emotional inertia,* and discuss underlying processes associated with well-being. Chapter 3 serves as a resource for simplifying the complexity of IEDs using regression graphics. Using dyadic data, Butner and colleagues exemplify various tools to graphically display IEDs and facilitate their interpretation, and they offer additional material for the reader's own applications in an appendix. Chapter 4 presents specific designs that elicit IEDs, such as dyadic interaction tasks and experimental designs. Lougheed and Hollenstein also review the various approaches to capture these dynamics, with specific attention to physiological arousal, emotional experience, and behavioral expression (e.g., State Space Grids; Hollenstein, 2013).

Chapters 5 and 6, respectively, focus on the biological and physiological correlates associated with IEDs. Chapter 5 begins with a review on the associations between serotonin and susceptibility to partner's emotions. Way and Keaveney also review the biochemical associations of empathy and discuss inflammation as a potential moderator of IEDs, highlighting the associations between chemical and behavioral outcomes. Moving from biology to physiology, Chapter 6 focuses on how the interactions with our relational partners "get under our skin." In doing so, Saxbe and co-authors review the various physiological systems linked to IED, specifically the Hypothalamic-Pituitary-Adrenal (HPA) Axis, the Autonomic Nervous System (ANS), Oxytocin, a neuropeptide associated with bonding, trust, and positive communication, and Testosterone.

The subsequent three chapters are dedicated to reviewing literature on IEDs within family (Chapter 7), young adult and peer (Chapter 8), and intimate relationships (Chapter 9). In Chapter 7, Repetti and McNeil focus on patterns of family interaction that give rise to both negative (demand-withdrawal), and positive (capitalization) IEDs. Furthermore, Chapter 7 reviews specific contexts, such as the within-family spillover and impact of daily stress on family emotion dynamics. In Chapter 8, Champion, Ha, and Dishion present a conceptual overview of coercion as a dynamic system that gives rise to IEDs, specifically within adolescence. Additionally, Chapter 8 presents recent data on the link between adolescent deviancy training and long-term effects on displays of coercion in romantic relationships ten years later. In Chapter 9, Shenhav, Hovasapian, and Campos provide an overview of emotion dynamics that are characteristic of intimate relationships. Special attention is given

to emotion dynamics that contribute to the formation, maintenance, and dissolution of such relationships.

Last, Chapter 10 provides an overview of promising areas for future direction, including the need to revise within-person processes, including biological processes, and reciprocal connections with relationship quality. Butler also points to the importance of the need for greater methodological tools and mathematical sophistication to examine IEDs in a variety of contexts.

Written by scholars in the field of emotion, close relationships, and related disciplines, this book synthesizes conceptual and empirical knowledge on IED within personal relationships. The chapters can serve as a valuable resource and guide for graduate students, researchers, and clinicians alike to understand: (1) theoretical and methodological considerations to studying interpersonal emotions, (2) empirical research on IED across various personal relationships, and (3) important areas for future research in these areas.

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