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An upward spiral: Bidirectional associations between positive affect and positive aspects of close relationships across the life span

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ABSTRACT

Both positive affect and positive close relationships contribute significantly to overall well-being. This review examines the literature assessing associations between positive affect and positive indices within close relationships across the life span. Specifically, the reviewed research includes parent–child relationships, friendships, and romantic relationships in relation to a variety of positive emotions and happiness more generally. This review also highlights several processes that may serve as partial mechanisms linking positive close relationships and positive affect including the interpersonal regulation and coregulation of positive emotion and the biological processes involved in experiences of positive affect and close relationships. Throughout the review, evidence of bidirectional, reciprocal associations between positive affect and positive close relationships is emphasized. Based on the current state of the literature, future directions for research in this area are considered.

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Introduction

Both positive affect (PA) and positive close relationships are sources of human strength and well-being. However, studying PA and positive relationship processes in relation to each other had been relatively rare until recently when a surge of research on both PA (see [Fredrickson & Cohn, 2008](#) for

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a review) and positive close relationships (see [Fincham & Beach, 2010](#), or [Gable & Gosnell, 2011](#) for a review) gave way to a large amount of literature linking these two oft-desired matters. Moreover, the literature as a whole indicates that the associations between PA and positive close relationships are bidirectional, with each mutually influencing the other resulting in an upward spiral (e.g., [Fredrickson, 2001](#)). This review highlights this upward spiral by reviewing direct associations between PA and several important close relationships across the life span, as well as the socioemotional and biological mechanisms linking them.

Positive close relationships

Close relationships such as parent–child relationships, friendships, and romantic relationships are some of the most significant aspects of life and are the most important of our social ties. Importantly, *positive* close relationships are not defined by their absence of negative experiences or processes (as negative experiences still occur at low levels even in the happiest relationships; e.g., [Gottman, Coan, Carrere, & Swanson, 1998](#)), but by their high level of flourishing properties such as experiences of intimacy, affection, shared fun, and perceived partner responsiveness (e.g., [Reis, 2012](#); [Reis & Gable, 2003](#)). Positive close relationships strongly influence behavior and development ([Reis, Collins, & Berscheid, 2000](#)) and are critically important for a host of reasons. Specifically, positive close relationships are partially responsible for enhanced psychological well-being (e.g., [Ryff & Keyes, 1995](#)) and favorable physical health, with social support and integration directly influencing physical well-being, buffering against the harmful effects of stress, and reducing the risk of mortality (e.g., [Cohen & Wills, 1985](#); [Holt-Lunstad, Smith, & Layton, 2010](#); [House, Landis, & Umberson, 1988](#)). Close relationships also fulfill the human need to form attachments to others.

Forming attachments to close others is necessary for infants' survival and aids in ideal functioning across the life span. The attachment system is an adaptive framework in which infants behave in ways to ensure proximity to caregivers for care and protection. In the first year, it is theorized that infants create mental representations of how sensitive and responsive caregivers are to the infants' needs ([Bowlby, 1969/1982](#)). Individual differences in attachment develop based on the caregiver's responsiveness, with responsive caregivers promoting secure attachment and unreliable or inconsistent caregivers promoting insecure attachment ([Ainsworth, Blehar, Waters, & Wall, 1978](#)). Attachment security is ideal and provides the foundation for optimal development. With age, children's encounters with others and development of affectional bonds (e.g., with friends, [Ainsworth, 1989](#)) are dictated by their early attachment histories ([Ainsworth et al., 1978](#); [Bowlby, 1969/1982](#)), and attachment styles remain fairly stable across time (see [Fraleay, 2002](#) for a meta-analysis), continuing to influence interpersonal relationships in adulthood ([Simpson, Collins, Tran, & Haydon, 2007](#); [Sroufe, 2005](#)). Ultimately, those with secure attachment styles are more likely to have positive close relationships (e.g., [Simpson et al., 2007](#)) and are more prone to experiencing PA both in their relationships (e.g., [Kafetsios & Nezlek, 2002](#)) and in general (e.g., [Alford, Lyddon, & Schreiber, 2006](#); also see [Mikulincer & Shaver, 2013](#) for a review).

Positive affect

PA is broad term referring to positively valenced attitudes, moods, and emotions. Positive attitudes pertain to fairly stable beliefs about how good something is. Positive moods like happiness are less stable and more general than attitudes, and are not directed at specific things. Positive emotions like joy are the most discrete, are usually very brief, and occur in response to good situations (e.g., [Gross, 2010](#)). Positive emotions could also be considered state PA, whereas trait PA refers to general, characteristic experiences of PA. Trait PA is an important element of subjective well-being, which is defined as the affective and cognitive evaluations people have of their own lives. Subjective well-being is made up of high PA, low negative affect (NA), and high life satisfaction, or the cognitive judgment of how well life is going globally (e.g., [Diener, Oishi, & Lucas, 2009](#)). PA is functionally important as it allows us to take advantage of opportunities ([Carver, 2003](#)) and enhance our resources. Specifically, [Fredrickson's \(1998b, 2001\)](#) broaden-and-build model proposes that experiencing positive emotions broadens our thoughts and actions in the moment and that this broadening builds resources that can

then be used in the future. When these enhanced resources are used at a later time, this often leads to heightened PA, thus creating an upward spiral.

Experiencing PA is also vital for a host of reasons (e.g., Lyubomirsky, King, & Diener, 2005). PA is conceptualized as one of the central mediators linking positive activities to greater well-being (Lyubomirsky & Layous, 2013). Specifically, PA begets benefits such as better physical health (Cohen, Alper, Doyle, Treanor, & Turner, 2006; Diener & Chan, 2011; also see Pressman & Cohen, 2005 for a review), increased self-regulation (Aspinwall, 1998), improved cognitive functioning (Yang, Yang, & Isen, 2013), superior decision making and problem solving (Isen, 2001), better performance at work (Kaplan, Bradley, Luchman, & Haynes, 2009), and is a contributor to healthy aging (see Ong, 2010 for a review). PA can also combat the deleterious effects of NA (Fredrickson, Mancuso, Branigan, & Tugade, 2000; Garland et al., 2010; Ong & Allaire, 2005) and depression (McMakin, Siegle, & Shirk, 2011) and can enhance coping skills (Tugade, Fredrickson, & Barrett, 2004), thus improving overall mental health. Additionally, experiencing too little PA is associated with negative mental health outcomes, and the dysregulation of PA (e.g., dampening, maximizing, or failing to regulate PA in ways that are maladaptive for a given context) can result in psychopathology (Carl, Soskin, Kerns, & Barlow, 2013; Gilbert, 2012; Kashdan et al., 2013; Watson & Naragon-Gainey, 2010).

Importantly, the benefits of PA are not just due to the absence of NA, as PA and NA are largely independent. Although the independence of momentary PA and NA is debated (e.g., Larson, 1987; Russell & Carroll, 1999), research indicates that PA and NA become more and more independent as the time-frame being measured across increases (Diener & Emmons, 1984). Thus, over longer periods of time, PA and NA are not bipolar opposites, but two relatively separate affective dimensions. Similar findings indicate that positive and negative well-being indices are separable as well (Huppert & Whittington, 2003). These findings support the likelihood that PA itself is associated with positive relationship functioning, rather than effects being driven by the absence of NA. To demonstrate this, many researchers control for NA when examining associations between PA and positive relationships, or examine the differential effects of PA and NA.

Discrete positive emotions and close relationships

Within general PA, there are a variety of discrete positive emotions that are inherently social, as they are generally experienced with another person or have social functions and implications (Algoe & Haidt, 2009; Maisel & Gable, 2009). Consequently, these positive emotions have important ties to close relationship experiences. Although we did not exclude any studies in the larger review based on the specific positive emotions investigated, we highlight several positive emotions in this section that are especially relevant and commonly studied in relation to positive features of close relationships. Note that this is not a comprehensive account of all discrete positive emotions.

Love. Fredrickson (2013) has suggested that any positive emotion experienced between two people actually is a micro-moment of love. However, love is more traditionally conceptualized as an attitude rather than a discrete emotion (see Reis & Aron, 2008 for a review). Regardless, experiences of love generally comprise many positive emotions, and these experiences within close relationships allow us to build social resources over time (Fredrickson, 1998b).

Gratitude. According to the find-remind-and-bind theory, gratitude is experienced when one receives a particularly good benefit from another. This benefit-induced gratitude influences social experiences because it spurs the beneficiary to recognize the good qualities of the giver and the dyad subsequently become closer (Algoe, 2012). Gratitude has further important relationship implications, because it often prompts people to behave prosocially in creative ways (Fredrickson, 2004) and directly provokes a desire to build the relationship (Algoe & Haidt, 2009), thereby strengthening bonds and enhancing feelings of closeness within relationships.

Joy. Joy is an intense, pleasurable emotion felt in response to a positive experience (Fredrickson, 1998b). Feelings of joy may trigger play behavior with others which then helps solidify close relationships (Fredrickson, 2001). Additionally, some researchers have hypothesized that experiencing joy is

followed by a desire to celebrate with others (de Rivera, Possell, Verette, & Weiner, 1989) and thus feelings of joy may spur people to engage in capitalization (i.e., share their positive events with others; Langston, 1994). Moreover, interactions with close relationship partners are often a source of joy (Fitness & Williams, 2013).

Pride. Authentic pride often occurs when a person experiences objective success (Williams & DeSteno, 2009). Similar to joy, feelings of pride could have positive interpersonal consequences in that it could motivate people to share achievements with close others (i.e., capitalize), which could then strengthen relationship bonds (Maisel & Gable, 2009).

Interest. Interest is an emotion similar to excitement or curiosity. When another person is the target of one's interest, the foundations of a relationship may be built or an existing relationship could be strengthened as the person desires to learn more about, be more involved with, and have new experiences with the other (Fitness & Williams, 2013; Fredrickson, 1998b).

Amusement and laughter. Amusement and laughter are generally experienced in social environments (Algoe, Fredrickson, & Chow, 2011; Provine, 2004), especially when with close others (Smoski & Bachorowski, 2003a). Shared amusement and laughter signals interest in relationship formation (Li et al., 2009) and helps build feelings of trust and intimacy (Algoe et al., 2011). It can also result in numerous social rewards (Kashdan, Yarbro, McKnight, & Nezlek, 2014) and long-lasting social bonds (Fredrickson, 2001) due to the creation of mutual PA (Bachorowski & Owren, 2001; Owren & Bachorowski, 2003).

Despite the important distinctions between these discrete positive emotions, most of the research reviewed in the body of this paper assessed PA in terms of averaged ratings across a range of positive emotions. In the review and tables, if only a more specific positive emotion was assessed in a particular study, that term is used when discussing the study's results. Otherwise, "PA" is used throughout the review and tables to describe the aggregation methods researchers often use when assessing and analyzing a number of positive emotions.

Bidirectional associations between positive affect and positive close relationships

Conceptually, PA and positive close relationships are reciprocally linked. Unidirectional theories suggest that positive emotions have affiliative functions whereby they help form, solidify, and maintain the social bonds of long-term close relationships by promoting intimacy and harmony (Fischer & Manstead, 2008) and by buffering against negative experiences and improving overall relationship satisfaction (Lambert, Fincham, Gwinn, & Ajayi, 2011). Additionally, theories such as attachment theory (Ainsworth et al., 1978; Bowlby, 1969/1982; Hazan & Shaver, 1987; Mikulincer & Shaver, 2005), the self-expansion model (Aron, Aron, Tudor, & Nelson, 1991; Aron et al., 2004), and the belongingness hypothesis (Baumeister & Leary, 1995) suggest that positive close relationships lead to and enhance PA. Other theories specifically propose bidirectional associations between PA and positive close relationships. For example, the broaden-and-build theory suggests that positive emotions build social resources which can then lead to more positive emotions (Fredrickson, 1998b, 2001). Also, the affect theory of social exchange proposes that positive exchanges within a close relationship produces positive emotions, which then generate stronger ties to that close relationship partner (Lawler, 2001).

Importantly, there is research indicating associations between PA and close relationships (e.g., Barrett, Robin, Pietromonaco, & Eysell, 1998; Clark & Finkel, 2005) as well as empirical support for the hypothesized bidirectional processes. For example, unidirectional research indicates that experiencing PA leads to more positive social interactions and relationships (e.g., Lyubomirsky et al., 2005) and that positive social experiences enhance PA (McIntyre, Watson, Clark, & Cross, 1991; McIntyre, Watson, & Cunningham, 1990; Vittengl & Holt, 1998, 2000). Further, experimental, short-term longitudinal research has revealed bidirectional associations whereby focusing on others' well-being increases one's own PA, and greater experiences of PA enhances positive relationships (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; Kok et al., 2013). Overall, the reciprocal influences of PA and positive close

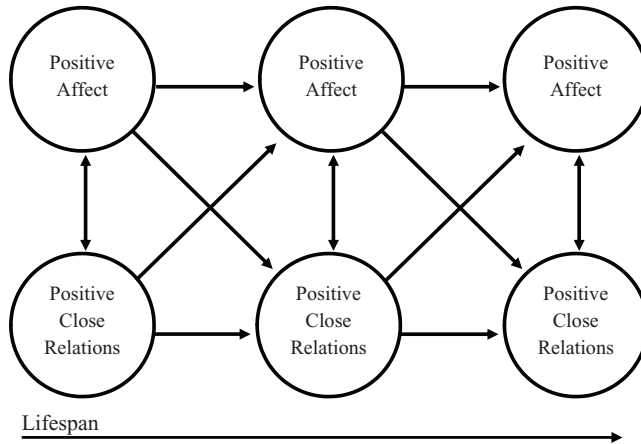


Fig. 1. Hypothesized model demonstrating the bidirectional associations between positive affect and positive close relationships across the life span.

relationships represent an upward spiral that continues throughout the life span, whereby PA begets positive relationships and positive relationships beget PA (see Fig. 1).

Life span considerations

Developmental research indicates that close relationships and experiences of PA change over time. For example, the primary relationship in infancy is the parent–child relationship, but friendships become important in childhood and romantic relationships arise in adolescence (e.g., [Furman & Buhrmester, 1992](#)). Throughout adulthood, these relationships continue to be important, but relationship dynamics may change. For instance, middle adults often serve multiple relationship roles as both a child and a parent. Additionally, in line with socioemotional selectivity theory, adults tend to value close relationships more and experience increased closeness and satisfaction in their relationships with age ([Carstensen, 1992](#); [Lang & Carstensen, 2002](#)). Regarding PA, infants begin smiling in response to social activity at around 3 weeks of age, begin laughing around 4 months of age ([Sroufe & Waters, 1976](#)), and continue to demonstrate various intensities of undifferentiated positive expressions throughout infancy ([Messinger, 2002](#)). With age, positive emotions become more refined and differentiated, and as children gain social and cognitive skills, they begin experiencing higher-order positive emotions such as pride ([Lagattuta & Thompson, 2007](#)) and gratitude ([Watkins, 2014](#)). The experience of PA also differs across adulthood, with older adults often reporting greater PA (especially low-arousal types of PA) compared with younger adults (e.g., [Carstensen et al., 2011](#); [Gross et al., 1997](#); [Scheibe, English, Tsai, & Carstensen, 2013](#); also see [Mikels, Reed, Hardy, & Löckenhoff, 2014](#) for a review). Due to the changing nature of PA and close relationships, it is critical to examine their associations across the life span to determine the consistency of the associations.

The current review

This review takes a life span approach to assess the large body of literature linking PA and positive close relationships. Importantly, evidence of bidirectional associations is highlighted. The review begins by addressing associations between several specific close relationships (parent–child, friend, and romantic relationships) and the experience of PA within these relationships across different age periods of the life span. Then the literature on potential mechanisms linking PA and close relationships is summarized, with specific focus on the interpersonal regulation and coregulation of PA as well as biological processes.

Selection of studies

Previously, researchers have reviewed literature on PA and negative social processes (i.e., social anxiety, Kashdan, Weeks, & Savostyanova, 2011), PA and psychopathology (e.g., Carl et al., 2013; Gilbert, 2012), and how positive relationships may impact health (Ryff & Singer, 2000). In contrast, this review specifically focuses on research examining associations between PA and PA-related concepts (e.g., discrete positive emotions, general emotional well-being, and life satisfaction) and positive close relationships. Regarding positive close relationships, several different indices were used, including actual indicators of positive relationships (e.g., secure attachment, relationship quality), positive relationship processes (e.g., play, support), and neutral relationship status (e.g., parental status, marital status). Negative affective experiences (e.g., NA, depression) and negative social processes (e.g., loneliness, relationship strain) were excluded from this review. Additionally, only research examining these processes within the three specific close relationships of interest (parent–child, friend, romantic) were included; more general social processes (e.g., wider social network, general feelings of social support) were not included. Relevant literature was found by searching for various keyword combinations in the Google Scholar, PsycINFO, and PsycARTICLES databases. Keyword combinations included one term from at least two of the following categories: (1) PA (e.g., positive emotion, well-being, life satisfaction, smiling); (2) positive relationships (e.g., relationship closeness, relationship satisfaction, secure attachment); (3) a relationship type (i.e., parent–child, friend, romantic); (4) an age period (i.e., infancy, childhood, adolescence, emerging adulthood, young adulthood, middle adulthood, older adulthood); and (5) a proposed mechanism (e.g., capitalizing, coregulation, cardiovascular functioning).

Table overview

A table is provided that details information from each reviewed empirical study that met the inclusion criteria outlined above (Table 1). Specifically, the table provides the type of study (e.g., developmental methodology used, other methodological features), sample size, age of participants, general category of PA and relationship constructs examined, and the specific manipulation or measure used to assess those PA and relationship constructs for each reviewed study. The brief summaries offered by this table are beneficial for closely examining the state of this body of literature, and several conclusions are drawn specifically from this table in the conclusion section.

Associations between positive affect and close relationships across the life span

Parent–child relationships

Infancy

Parents who have pre-verbal infants must use other means to communicate with them. Thus, at this age, smiling, tickling, and laughing serve as a series of positive communication channels for parents and their infants (Nwokah, Hsu, Dobrowolska, & Fogel, 1994; Provine, 2004). For example, infants often smile when engaged in various types of play with their mothers and fathers (Dickson, Walker, & Fogel, 1997), and toddlers display more PA when playing with a fun musical toy if their mothers are playing with them compared with playing alone (Roque & Verissimo, 2011). Additionally, infants prefer to look at their parents' happy facial expressions compared with their sad facial expressions (Montague & Walker-Andrews, 2002), and actually use their mother's positive facial expressions as cues that they are safe and can explore in uncertain situations (Sorce, Emde, Campos, & Klinnert, 1985). It also seems that mothers and fathers may play a different role in socializing their infants' PA (Feldman, 2003). For example, fathers tend to create greater high-arousal PA by engaging in more physical play with their children, while mothers tend to create more low- and medium-arousal PA with their play (e.g., Yogman, 1981).

Secure attachment has also been linked to PA experiences beginning in infancy. Specifically, although sensitivity was originally predicted to be the necessary condition for the development of attachment security (Bowlby, 1969/1982), a meta-analysis by De Wolf and van IJzendoorn (1997) indicates that parents' positive attitudes (e.g., expressing PA, showing warmth and affection to infants)

Table 1

Overview of reviewed studies in the “Associations between positive affect and close relationships across the life span” section.

Study	Study type ^a	N	Age ^b	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Parent–child relationships							
Dickson et al. (1997) ^c	O, C, Obs	36	12 months	PA expression	Smile type coded using the Facial Affect Coding System (FACS)	Parent–child play	Observed type of play
Roque and Verissimo (2011)	O, E, Obs	55	18–26 months ($M = 21.35$, $SD = 1.91$)	PA expression	Observed smiling or positive vocalization; emotional intensity	Mother–child play	Mother involved vs. mother constrained
Montague and Walker-Andrews (2002)	O, E, Obs	32	3.5 months	PA perception	Time looking at parents' happy expressions	Pictures of parents and unfamiliar adults	Expressions of parents vs. unfamiliar adults
Sorce et al. (1985)	O, E, Obs	69	12 months	PA perception	Mothers' expressions of joy or interest during Visual Cliff	–	–
Feldman (2003)	O, C, Obs	100	5 months ($M = 20.51$ wk, $SD = 3.14$)	PA expression	Orientation, intensity, and temporal pattern of positive arousal	Parent–child play	Observed play during free play period
Matas et al. (1978)	L, C, Obs	48	T1: 18 months T2: 24 months	PA expression	Observed PA and enthusiasm	Secure attachment to mother	Strange situation
Waters et al. (1979)	L, C, Obs	48	T1: 18 months T2: 24 months	PA expression	Observed smiling and quality of affect	Secure attachment to mother	Strange situation
Diener et al. (2002)	O, C, Obs	120	12–13 months	PA expression	Observed smiling or positive vocalization	Secure attachment to mother and father	Strange situation
Kochanska (2001)	L, C, Obs	112	T1: $M = 8.94$, $SD = .63$ T2: $M = 13.65$, $SD = .74$ T3: $M = 22.30$, $SD = .56$ T4: $M = 32.80$, $SD = .53$ (months)	PA expression	Observed joy	Secure attachment to mother	Strange situation
Cassidy et al. (1992)	O, C, Obs	61	Kindergarten and first grade children	PA expression	Observed parent and child PA expressiveness	–	–
Isley et al. (1999)	O, C, Obs	116	4 years, 9 months–6 years, 5 months ($M = 5$ years, 6 months)	PA expression	Observed parent and child warmth, happiness, and positive responsiveness	–	–
Robinson et al. (2009)	O, C, Obs	123	12–47 months ($M = 32.62$)	PA expression	Observed intensity and frequency of parent and child smiles, laughter, and joyful expressions	–	–

(continued on next page)

Table 1 (continued)

Study	Study type ^a	N	Age ^b	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Sallquist et al. (2010)	L, C, Obs	247	T1: 18 months T2: 30 months T3: 42 months T4: 54 months	PA expression	Observed mother and child smiling, positive tone of voice, or laughter	–	–
Hoy et al. (2013)	O, C	148	9–11 (<i>M</i> = 10.22, <i>SD</i> = 0.62)	Trait gratitude; life satisfaction	Gratitude Questionnaire; Satisfaction with Life Scale; Students' Life Satisfaction Scale	–	–
Tobin and Graziano (2011)	O, E, Obs	116	5–10 (<i>M</i> = 8.21, <i>SD</i> = 1.41)	PA expression	Observed general PA and smiling	Presence of mother	Mother present vs. mother absent
Spinrad et al. (2004)	L, C, Obs	43	T1: 18 months T2: 30 months T3: 5 years	PA expression	Facial expressions of PA coded using FACS	Mother regulation of child affect	Observed mother regulatory strategies
Laible (2010)	O, C, Obs	50	<i>M</i> = 50.69 months, <i>SD</i> = 4.64 months	PA expression	Observed maternal and child warmth	Secure attachment to parents; conversational style	Attachment Q-sort; observed conversational style during positive reminiscence
Grolnick et al. (1996)	CS, C, Obs	114	G1: <i>M</i> = 12.07 months, <i>SD</i> = 1.30 weeks G2: <i>M</i> = 18.16 months, <i>SD</i> = 1.40 weeks G3: <i>M</i> = 24.21 months, <i>SD</i> = 1.40 weeks G4: <i>M</i> = 31.45 months, <i>SD</i> = 1.90 weeks	PA expression	Observed mother and child PA expressions	Initiation of PA during interaction	Observed if mother or child initiated PA
Ontai and Thompson (2002)	L, C, Obs	T1: 52 T2: 29	T1: <i>M</i> = 41.2 months, <i>SD</i> = 3.0 months T2: <i>M</i> = 60.84 months, <i>SD</i> = .32 months	PA understanding	Denham puppet task	Secure attachment to parents; conversational style	Attachment Q-sort; observed conversational style during positive reminiscence
Abraham and Kerns (2013)	STL, C, Daily	106	8–12 (<i>M</i> = 10 years, 3 months)	State PA	Self-reported feelings of daily PA	Secure attachment to mother	Kerns Security Scale
Borelli et al. (2010)	O, C	97	8–12 (<i>M</i> = 10.01, <i>SD</i> = 1.52)	State and trait PA	"How I Feel;" Positive and Negative Affect Scale for Children (PANAS-C)	Secure attachment to parents	Child Attachment Interview
Kerns et al. (2007)	O, C	52	9–11 (<i>M</i> = 10 years, 6 months)	State PA	Youth Everyday Social Interaction and Mood Scales	Secure attachment to mother	Kerns Security Scale; Attachment Doll Story Completion Task

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Table 1 (continued)

Study	Study type ^a	N	Age ^b	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Gentzler, Ramsey & Black (2014)	O, C	96	7–12 ($M = 9.23, SD = 1.35$)	Mother socialization of PA regulation	Parents' Responses to Children's Positive Events survey	Secure attachment to mother	Kerns Security Scale
Ben-Zur (2003) – Study 2	O, C	121	15–19 ($M = 17.06, SD = 0.86$)	Trait PA; Life satisfaction	PANAS; Satisfaction with Life Scale	Relationship quality	Adolescent–Parent Relationships Scale
Casas et al. (2008)	O, C	266	12–16 ($M = 14.1, SD = 1.3$)	Life satisfaction	Personal Well-being Index	–	–
Diamond et al. (2012)	O, C	103	14	State PA	Self-reported ratings of various momentary positive emotions	–	–
Gentzler, Ramsey, Yi et al. (2014)	STL, C, Daily	56	10–14 ($M = 11.88, SD = 1.38$)	PA regulation	Self-reported responses to daily positive events	Secure attachment to parents	Kerns Security Scale
Larson and Richards (1991)	CS/STL, C, Daily	483	9–15	State PA	Momentary positive emotions	Companionship	Time spent with parents
Ducharme et al. (2002)	STL, C, Daily	105	15–16	PA experience with parents	Self-reported positive interactions with parents	Secure attachment to parents	The Relationship Questionnaire
Caprara et al. (2006)	L, C	664	T1: $M = 16.73, SD = 1.17$ T2: $M = 18.41$	Trait PA; Life satisfaction	PANAS; Satisfaction with Life Scale	Relationship quality with parents	Interpersonal-Social Self-Efficacy Beliefs measure
Weinstein et al. (2006)	Seq, C, ESM	508	G1: $M = 13.94, SD = 0.40$ G2: $M = 16.01, SD = 0.42$	State PA	Momentary positive emotions	Family support	Family Relationship Index
Cooper et al. (1992)	O, C	249	College students	Trait PA; Life satisfaction	PANAS; Satisfaction with Life Scale	Relationship satisfaction with parents	Satisfaction with activities with parents
Sim and Ng (2007)	O, C	114	17–24 ($M = 21$)	Trait PA	PANAS	Secure attachment to parents	Parent Attachment Questionnaire
Laible (2007)	O, C	117	($M = 19.6, SD = 1.41$)	PA expressiveness	Self-Expressiveness Questionnaire	Secure attachment to parents	Inventory of Parent and Peer Attachment
Diener and Seligman (2002)	L, C, Daily	222	College students	Subjective well-being	Satisfaction with Life Scale; Global Affect Balance (self); Informant Affect Balance; Daily Affect Balance	Relationship quality with parents	Self-rating of strong family relationships
Silvers and Haidt (2008)	O, E, Obs	42	Mothers of infants	Experience of elevation	Induced elevation vs. amusement	Mothers' lactation and nurturant behavior	Observed nursing and affection
Adam et al. (2004)	O, C, Obs	102	Mothers of 2 year olds ($M = 34$)	Trait PA	Multidimensional Personality Questionnaire	Warm and responsive parenting behavior	Observed parenting behavior qualities

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Table 1 (continued)

Study	Study type ^a	N	Age ^b	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Murdock et al. (2014)	O, C	53 dyads	Mothers and fathers of 3–5 year olds W: $M = 32.63, SD = 4.69$ M: $M = 35.59, SD = 6.01$	Trait PA	PANAS	Supportive and engaged parenting behavior	Parent Behavior Inventory
Desjardins et al. (2008)	O, C	95	Mothers of children ages 6–14	Life satisfaction	Satisfaction with Life Scale	Authoritative parenting style	Child Rearing Practices Report Questionnaire
Caprara and Steca (2006)	O, C	347	40–60	Self-efficacy in managing PA; Life satisfaction; Frequency and intensity of PA	Affective Self-Regulatory Efficacy Scale; Satisfaction with Life Scale; PANAS	Parental self-efficacy	Self-reported efficacy beliefs about relationships with children
Nelson et al. (2013) – Study 1	O, C	6906	17–96 ($M = 44.33, SD = 18.29$)	Subjective well-being	Single-item measures of happiness, life satisfaction, and meaning in life	Parent status	Parent vs. non-parent
Nelson et al. (2013) – Study 2	O, C, ESM	329	18–94 ($M = 56.93, SD = 22.66$)	Momentary and global subjective well-being	Momentary positive emotion and meaning in life; Subjective Happiness Scale	Parent status	Parent vs. non-parent
Nelson et al. (2013) – Study 3	O, C, DRM	186	Median = 36	State PA	Recalled PA and meaning in life for various activities	Parent status	Parent vs. non-parent
Ashton-James et al. (2013) – Study 1	O, C	136	Median = 34	Parental well-being	Subjective Happiness Scale; Meaning in Life Questionnaire	Child-centrism	Child-Centrism Scale
Ashton-James et al. (2013) – Study 2	O, C, DRM	186	Median = 36	State PA	Recalled PA and meaning in life for various activities	Child-centrism	Child-Centrism Scale
Marks et al. (2004)	CS, C	3032	25–74	Psychological wellness	Unidentified measure of psychological wellness	Parent status	Parent vs. non-parent
Friendships							
Larson and Richards (1991)	CS/STL, C, Daily	483	9–15	State PA	Momentary positive emotions	Companionship	Time spent with friends
Weinstein et al. (2006)	Seq, C, ESM	508	G1: $M = 13.94, SD = 0.40$ G2: $M = 16.01, SD = 0.42$	State PA	Momentary positive emotions	Peer support	Inventory of Parent and Peer Attachment
Gonzaga et al. (2001) – Study 3	O, C, Obs	66	G1: $M = 14.77, SD = .55$ G2: $M = 17.92, SD = .44$	PA expression	Observed affiliation cues (e.g., smiles)	Friendship quality	Assessment of Friendship Features
Berry et al. (2000)	STL, C, Daily	131 dyads	$M = 21.6$	Trait PA	PANAS	Friendship quality	Self-reported friendship quality

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Table 1 (continued)

Study	Study type ^a	N	Age ^b	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Cooper et al. (1992)	O, C	249	College students	Trait PA; Life satisfaction	PANAS; Satisfaction with Life Scale	Relationship satisfaction with friends	Satisfaction with activities with friends
Demir and Weitekamp (2007)	O, C	423	18–44 ($M = 22.53$, $SD = 4.69$)	Trait PA; Life satisfaction	PANAS; Satisfaction with Life Scale	Best friendship quality	McGill Friendship Questionnaire-Friend's Functions scale
Diener and Seligman (2002)	L, C, Daily	222	College students	Subjective well-being	Satisfaction with Life Scale; Global Affect Balance (self); Informant Affect Balance; Daily Affect Balance	Relationship quality with friends	Self-rating of quality of close friendships
Laible (2007)	O, C	117	$M = 19.6$, $SD = 1.41$	PA expressiveness	Self-Expressiveness Questionnaire	Secure attachment to friends	Inventory of Parent and Peer Attachment
Oishi et al. (2007)	O, C	193	College students	Affect balance	Frequency of self-reported positive emotions minus negative emotions	Number of close friends	Self-reported number of close friends
Smoski and Bachorowski (2003a)	O, E	72	$M = 18.1$	PA expression	Expression of laughter	Friend status	Friend dyads vs. stranger dyads
Smoski and Bachorowski (2003b)	O, E	148	$M = 18.3$, $SD = .94$	PA expression	Expression of laughter	Friend status	Friend dyads vs. stranger dyads
Waugh and Fredrickson (2006)	L, C, Daily	118	$M = 18$, $SD = .25$	State and trait PA	Differential Emotions Scale	Perceived relationship closeness	Inclusion of Other in Self Scale
Anderson et al. (2003) – Study 2	L, C	37 dyads	18–19	State PA	Ratings of happiness, amusement, and pride	Roommate closeness	Three self-report items assessing closeness
Algoe et al. (2008)	L, C	160	18–22 ($M = 19.2$)	State gratitude	Self-reported feelings after receiving gifts	Relationship quality and closeness	Self-reported relationship quality and amount of time spent with benefactor
Lambert and Fincham (2011) – Study 4	L, E	97	18–23 (median = 19)	Expression of gratitude	Expression of gratitude condition vs. three other control conditions	Positive perception of friend	Self-reported positive perceptions of a close friend
Lambert et al. (2010) – Study 3	L, E	75	18–23 (median = 19)	Expression of gratitude	Expression of gratitude condition vs. three other control conditions	Relationship strength and satisfaction	Self-reported strength of relationship
Rotkirch et al. (2014)	O, C	772	$M = 28.80$, $SD = 11.30$	Anticipated gratitude	Responses to three vignettes designed to elicit emotional or financial gratitude	Relationship closeness	Three items assessing relationship closeness

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Table 1 (continued)

Study	Study type ^a	N	Age ^b	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Huxhold et al. (2014)	Seq, C	2032	G1: 40–64 (<i>M</i> = 53.30) G2: 65–up (<i>M</i> = 73.73)	Trait PA; Life satisfaction	PANAS; Satisfaction with Life Scale	Amount of social activities with friends	Reported on frequency of 9 social activities over past year
Gladow and Ray (1986)	O, C	63	20–54 (<i>M</i> = 34)	Happiness	Single-item report of happiness	Support from friends	Self-reported support from friends
Lyubomirsky et al. (2006)	O, C	621	51–95 (<i>M</i> = 70)	Happiness	Subjective Happiness Scale	Satisfaction with friendships	Self-reported satisfaction with friendships
Requena (1995)	CS, C	2734	18 and up	Happiness	Single-item report of happiness	Friendship network	Number of friends who are close and not as close
Siebert et al. (1999)	L, C	800	58–64	Life satisfaction	Self-reported domain specific satisfaction	Friendship identity and support	Self-reported friendship identity, commitment, support, and frequency of calling/seeing friends
Romantic relationships							
Richards et al. (1998)	L, C, ESM	218	T1: 10–14 T2: 13–18	State PA	Momentary positive emotions	Companionship	Time spent with same-sex and opposite-sex peers
Seiffge-Krenke (2003)	L, C	145	T1: 13 T2: 15 T3: 17 T4: 21	Romantic love	Love Experience Questionnaire	Quality of romantic relationships	Love Experience Questionnaire
Berry and Willingham (1997)	O, C	303	College students	Trait PA	PANAS	Relationship quality with romantic partner	Self-reported commitment to the relationship
Diener and Seligman (2002)	L, C, Daily	222	College students	Subjective well-being	Satisfaction with Life Scale; Global Affect Balance (self); Informant Affect Balance; Daily Affect Balance	Relationship quality with romantic partner	Self-rating of romantic relationships
Oishi et al. (2007)	O, C	193	College students	Affect balance	Frequency of self-reported positive emotions minus frequency of self-reported negative emotions	Time spent dating	Self-reported time spent dating
Watson et al. (2000)	O, C	136	College students	Trait PA	PANAS-X	Relationship satisfaction	SMU Relationship Questionnaire; Dyadic Adjustment Scale
Stanton et al. (2014)	O, E	192	18–41 (<i>M</i> = 22.36, <i>SD</i> = 3.39)	State PA	PANAS	Reflecting on partner	Reflected on partner vs. opposite-sex friend vs. morning routine
Demir (2008) – Study 1	O, C	221	19–28 (<i>M</i> = 22.49, <i>SD</i> = 4.65)	Happiness	Subjective Happiness Scale	Relationship quality with romantic partner	Perceived Relationship Quality Component

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Table 1 (continued)

Study	Study type ^a	N	Age ^b	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Demir (2008) – Study 2	O, C	187	18–29 ($M = 22.02$, $SD = 3.02$)	Trait PA; Life satisfaction	PANAS; Satisfaction with Life Scale	Relationship quality with romantic partner	McGill Friendship Questionnaire-Friend Functions
Tidwell et al. (1996)	STL, C, Daily	125	17–21	State PA	Daily PA experienced during social interactions	Secure attachment style	Single-item measure of attachment within romantic relationships
Gentzler et al. (2010) – Study 2	O, E	133	18–30 ($M = 19.05$)	PA regulation	Regulation of positive emotions after experiencing positive event (coded from stream-of-consciousness thought report)	Secure attachment style	Experiences in Close Relationships Questionnaire
Simpson (1990)	L, C	144 couples	W: $M = 18.7$ M: $M = 19.4$	Trait PA	Self-reported frequency of mild and intense positive emotions within relationship	Secure attachment style	Adult Attachment Measure
Magai et al. (1995)	O, C	129	18–39 ($M = 25$, $SD = 4.6$)	Trait PA	Differential Emotions Scale	Secure attachment style	Adult Attachment Style Questionnaire
Shiota et al. (2006)	O, C	108	$M = 21.7$, $SD = 4.7$	Trait PA	Dispositional Positive Emotion Scales	Secure attachment style	Experiences in Close Relationships Questionnaire
Gonzaga et al. (2001) – Study 1	L, C, Obs	60 couples	College students	PA expression; State love	Observed smiling and other affiliation cues; Self-reported feelings of momentary love	Relationship satisfaction and commitment	Self-report measures of relationship satisfaction, mutual influence, and shared activities
Gonzaga et al. (2006) – Study 1	O, C, Obs	63 couples	W: $M = 20.4$, $SD = 3.59$ M: $M = 21.3$, $SD = 4.04$	PA expression; State love	Observed smiling and other affiliation cues; self-reported feelings of momentary love	Relationship commitment	Self-reported commitment to romantic partner
Murray and Hazelwood (2011)	O, C	156	18–70 ($M = 34$, $SD = 11.66$)	Trait gratitude	Gratitude Questionnaire	Relationship intimacy	Emotional Intimacy Scale
Algoe et al. (2010)	L, C, Daily	67 couples	19–56 ($M = 25.16$, $SD = 6.33$)	State gratitude	Self-reported daily thankfulness, appreciation, and gratitude	Daily relationship satisfaction and connection	Self-reported daily relationship satisfaction and connection
Lambert et al. (2010) – Study 1	O, C	137	18–37 (median = 19)	Gratitude expression	Expression of Gratitude in Relationship scale	Communal strength and relationship satisfaction	Self-reported communal strength within relationship and relationship satisfaction

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Table 1 (continued)

Study	Study type ^a	N	Age ^b	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Lambert et al. (2010) – Study 2	L, C	218	17–33 (median = 19)	Gratitude expression	Expression of Gratitude in Relationship scale	Communal strength and relationship satisfaction	Self-reported communal strength within relationship and relationship satisfaction
Algoe et al. (2013)	L, C	77 couples	18–57 (M = 28)	Responsiveness to expression of gratitude	Perceived partner responsiveness after expressing gratitude	Relationship satisfaction	Relationship Satisfaction Scale
Bazzini et al., 2007	O, E	52 couples	W: M = 21.29 (SD = 2.40) M: M = 22.29 (SD = 3.13)	Shared laughter	Induced reminiscence of shared laughter vs. independent laughter, shared positivity, and independent positivity	Relationship satisfaction	Three items assessing relationship satisfaction
Anderson et al. (2003) – Study 1	L, C	60 couples	M = 20, SD = 1.78	State PA	Ratings of happiness, amusement, and pride	Relationship status	Broken up vs. still together
Aron et al. (2000) – Study 3	O, E	28 couples	17–44 (M = 23.13)	State PA	Induced PA with shared novel-arousing task vs. control mundane task	Relationship satisfaction	Relationship Assessment Scale; Marital Opinion Questionnaire
Aron et al. (2000) – Study 4	O, E	63 couples	18–54 (M = 25.8)	State PA	Induced PA with shared novel-arousing task vs. control mundane task and no-activity condition	Relationship satisfaction	Relationship Assessment Scale; Marital Opinion Questionnaire
Aron et al. (2000) – Study 5	O, E, Obs	35 couples	21–46 (M = 32.4)	State PA	Induced PA with shared novel-arousing task vs. control mundane task	Relationship satisfaction; Relationship quality	Marital Opinion Questionnaire; Observed relationship quality coded using the Rapid Marital Interaction Coding System
Reissman et al. (1993)	L, E	53 couples	W: M = 41.02 M: M = 42.17	State PA	Induced PA with shared exciting activities vs. shared pleasant activities and a no-activity control	Marital satisfaction	Dyadic Adjustment Scale
Graham (2008)	L, C, ESM	20 couples	W: M = 31, SD = 10.1 M: M = 32, SD = 11.9	State PA	Momentary positive emotions	Relationship quality with romantic partner	Self-reported momentary relationship quality
Gable et al. (2003)	L, C, Daily	58 couples	W: M = 21 M: M = 22	State PA	Self-reported daily positive emotions	Daily relationship well-being and perceived partner positive behaviors	Daily self-reports of relationship well-being (single item) and perceived partner positive behaviors

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Table 1 (continued)

Study	Study type ^a	N	Age ^b	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Driver and Gottman (2004)	O, Obs	49 couples	Newlywed couples	PA expression	Expression of PA coded using Specific Affect Coding System (SPAFF)	Affection during conflict	Affection coded using Specific Affect Coding System (SPAFF)
Gottman et al. (1998)	L, C	130 couples	W: $M = 25.4$, $SD = 3.5$ M: $M = 26.5$, $SD = 4.2$	PA expression	Expression of PA coded using Specific Affect Coding System (SPAFF)	Relationship status; Relationship satisfaction	Married vs. divorced; Locke–Wallace Marital Satisfaction measure
Huston et al. (2001)	L, C	164 couples	Newlywed couples	Trait love	Relationship Questionnaire	Relationship status; Relationship satisfaction	Married vs. divorced; Marital Opinion Questionnaire
Oishi et al. (2007)	O, C	118,519	Adults	Life satisfaction	Single-item report of life satisfaction	Relationship status	In a stable relationship vs. not in a stable relationship
Stack and Eshleman (1998)	O, C	18,000	Adults	Happiness	Single-item report of happiness	Marital status	Married vs. cohabitating vs. divorced vs. separated vs. widowed vs. single
Harker and Keltner (2001)	L, C	141	T1: 20–21 T2: 27 T3: 38 T4: 52	PA expression	Positive facial expressions coded using FACS	Marital status	Married vs. single
Lucas et al. (2003)	L, C	24,763	Adults	Life satisfaction	Single-item report of life satisfaction	Marital status	Married vs. single
Marks and Fleming (1999)	Seq, C	over 20,000	G1: 18 @ T1, 33 @ T10 G2: 17 @ T1, 30 @ T10 G3: 16 @ T1, 24 @ T9 G4: 17 @ T1, 20 @ T4	Life satisfaction	Self-reported satisfaction for various domains	Marital status	Married vs. single
Stutzer and Frey (2006)	L, C	15,268	$M = 44.70$, $SD = 14.70$	Life satisfaction	Single-item report of life satisfaction	Marital status	Married vs. single
Glenn and Weaver (1981)	O, C	over 12,000	Adults	Global happiness	Single-item report of happiness	Marital happiness	Single-item report of marital happiness
Watson et al. (2000)	O, C	74	26–81 ($M = 47.1$)	Trait PA	PANAS-X	Relationship satisfaction	Marital Adjustment Test; Quality of Marriage Index; SMU Relationship Questionnaire
Gottman and Levenson (1992)	L, C	73 couples	W: $M = 29.0$, $SD = 6.8$ M: $M = 31.8$, $SD = 9.5$	PA expression	Expression PA coded using SPAFF	Marital satisfaction	2 unidentified marital satisfaction questionnaires
Gordon et al. (2011)	L, C, Daily	50 couples	21–67 ($M = 46.17$, $SD = 10.28$)	State gratitude	Self-reported daily partner-specific gratitude	Relationship happiness	Self-reported daily relationship happiness
Kubacka et al. (2011)	L, C	195 couples	T1: 25–40 W: $M = 29.20$, $SD = 4.28$ M: $M = 32.07$, $SD = 4.86$	Experience of gratitude	Self-reported partner-specific gratitude	Relationship maintenance	Self-reported relationship maintenance behaviors

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Table 1 (continued)

Study	Study type ^a	N	Age ^b	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Stephoe et al. (2011)	O, C, ESM	4258	52–79 ($M = 64.3$)	State PA	Three positive emotions words	Marital status	Married vs. unmarried
Mroczek and Spiro (2005)	L, C	1927	T1: 33–92 ($M = 55, SD = 8$)	Life satisfaction	Life Satisfaction Inventory: Form A	Marital status	Married vs. not married (widowed, divorced, separated, never married)
Nezlek et al. (2002)	L, C, Daily	113	$M = 71.2, SD = 6.4$	Life satisfaction	Life Satisfaction Index A – Satisfaction with Life Scale	Positive interactions with spouse	Self-reported positive qualities of daily interactions with spouse
Carstensen et al. (1995)	CS, C	156 couples	G1: W: $M = 43.4, SD = 2.9$ M: $M = 44.3, SD = 2.9$ G2: W: $M = 62.2, SD = 3.2$ M: $M = 63.6, SD = 2.9$	PA expression	PA expression coded using SPAFF	Marital satisfaction	Locke–Williamson measure and Locke–Wallace measure of marital satisfaction
Levenson et al. (1994)	CS, C	151 couples	G1: 40–50 W: $M = 43.3, SD = 2.9$ M: $M = 44.3, SD = 2.9$ G2: 60–70 W: $M = 62.2, SD = 3.2$ M: $M = 63.6, SD = 2.9$	State PA	PA experience reported continuously using a dial	Marital satisfaction	Locke–Williamson measure and Locke–Wallace measure of marital satisfaction

^a The first study type listing indicates if the study was cross-sectional (CS), longitudinal (L), short-term longitudinal (STL), cross-sequential (Seq), or just had one age group at one time point (O). The second listing indicates if the study was correlational (C) or experimental (E). If there is a third listing, it indicates specific methodology used (Obs = observational, ESM = experience sampling methodology, Daily = daily diaries, DRM = day reconstruction method).

^b When reported, age range, mean (M), and standard deviation (SD) are all presented. Unless otherwise indicated, age is in years. T1 = time 1; W = women; M = men; G = group or cohort.

^c References are listed in the order they appear in the text.

are also needed for the establishment of infants' secure attachment. Thus, PA plays a role in generating infants' attachment security, and security may, in return, foster increased PA in children. For example, infants who are more securely attached to their fathers (Diener, Mangelsdorf, McHale, & Frosch, 2002) and toddlers who are more securely attached to their mothers (Matas, Arend, & Sroufe, 1978; Waters, Wippman, & Sroufe, 1979) display more smiling and expressions of PA compared with insecure infants and toddlers. Also, from infancy to early childhood, children who are securely attached to their parents show more joy during periods of play (Kochanska, 2001).

Childhood

Parents continue to socialize and cultivate their children's PA as their children age by means of reacting to their children's PA in particular ways, discussing positive feelings with their children, modeling their own expressions of PA (Eisenberg, Cumberland, & Spinrad, 1998), directly and indirectly communicating positive emotional ideals, and selecting particular positive experiences for their children to have (Eisenberg, Spinrad, & Cumberland, 1998; Fredrickson, 1998a). Due to these socialization processes, children unsurprisingly experience and express levels of PA similar to that of their parents generally (see Halberstadt & Eaton, 2002 for a meta-analysis), during positive events (Cassidy, Parke, Butkovsky, & Braungart, 1992), and during play (Isley, O'Neil, Clatfelter, & Parke, 1999; Robinson et al., 2009; Sallquist et al., 2010). Older children also experience similar levels of gratitude to their mothers and similar levels of life satisfaction to their mothers and fathers (Hoy, Suldo, & Mendez, 2013). Moreover, mothers influence the likelihood of their children expressing PA when it is socially appropriate to do so. Specifically, when children receive an unwanted gift, they display more PA when their mothers are present (Tobin & Graziano, 2011) and when their mothers help regulate their affect earlier in life (Spinrad, Stifter, Donelan-McCall, & Turner, 2004). Overall, warm and cohesive family environments are conducive to PA for both mothers and their young children (Laible, 2010). However, it is important to note that these influences are not entirely top-down or unidirectional, with parents only influencing their children (Eisenberg, Cumberland et al., 1998), as it seems that children actively influence their parents' PA, too. Specifically, from infancy to early childhood, children increasingly initiate PA when interacting with their mothers, while mothers gradually initiate PA less over time (Grolnick, Cosgrove, & Bridges, 1996).

Secure attachment also continues to be associated with greater PA in childhood. In early childhood, securely attached children and their mothers experience higher levels of PA when reminiscing about positive events compared with insecure dyads, and mothers of securely attached children elaborate more (Laible, 2010) and prompt their children for more information during positive reminiscence, which is associated with children's better understanding of positive emotions (Ontai & Thompson, 2002). In middle and late childhood, secure attachment to parents is associated with greater state and trait PA (Abraham & Kerns, 2013; Borelli et al., 2010; Kerns, Abraham, Schlegelmilch, & Morgan, 2007). Securely attached children also report that their mothers are happier when the children experience positive events (Gentzler, Ramsey, & Black, 2014).

Adolescence

Parents continue to socialize their children's emotions in adolescence (Morris, Silk, Steinberg, Myers, & Robinson, 2007) and the link between parent and child PA endures. For example, parents with high subjective well-being and fathers with high trait PA have adolescents with higher subjective well-being and increased trait PA (Ben-Zur, 2003; Casas et al., 2008). Similarly, mothers and their adolescents experience similar levels of state PA while discussing emotional events (Diamond, Fagundes, & Butterworth, 2012). Additionally, fathers and adolescents who have better quality relationships experience greater trait PA (Ben-Zur, 2003) and adolescents who are securely attached to their fathers report greater savoring or up-regulation of positive emotion after experiencing a positive event (Gentzler, Ramsey, Yi, Palmer, & Morey, 2014). Although some research indicates that PA experienced with family declines from late childhood into early adolescence, PA with family increases again during mid-adolescence (Larson & Richards, 1991), especially for middle adolescents who are securely attached to their parents (Ducharme, Doyle, & Markiewicz, 2002). Additionally, in mid- to late-adolescence, having greater support from family members and having positive relationships with parents are associated

with increased adolescent state and trait PA and life satisfaction (Caprara, Steca, Gerbino, Paciello, & Vecchio, 2006; Weinstein, Mermelstein, Hedeker, Hankin, & Flay, 2006).

Emerging and young adulthood

Surprisingly little research has been conducted examining young adults' relationships with their parents in the context of PA. The research available demonstrates that, once in college, young adults who report more satisfying relationships with their parents have greater trait PA and life satisfaction (Cooper, Okamura, & Gurka, 1992) and are better-adjusted overall (e.g., O'Connor, Allen, Bell, & Hauser, 2002). Relatedly, young adults who are securely attached to their parents experience significantly greater trait PA (Sim & Ng, 2007) and express positive emotions more often (Laible, 2007). Also, those who consistently report high levels of happiness spend more time with family members and have better quality family relationships compared with people who report average and low levels of happiness (Diener & Seligman, 2002).

Middle adulthood

In middle adulthood, research indicates that parents' experiences of PA are linked to their parenting behaviors and their interactions with their children. For example, mothers who are induced to feel elevation, a positive emotion often experienced when viewing others behaving in virtuous, pure, or seemingly superhuman ways (Haidt, 2003), are more likely to nurse and hug their infants (Silvers & Haidt, 2008). Additionally, mothers and fathers with higher levels of general PA display and report more warm, supportive, and responsive parenting behaviors with their young children (Adam, Gunnar, & Tanaka, 2004; Murdock, Lovejoy, & Oddi, 2014), and mothers who have higher subjective well-being are more likely to have the ideal authoritative parenting style (Desjardins, Zelenski, & Coplan, 2008). Parents who feel more efficacious in expressing their positive emotions when good things happen also report more positive and successful relationships with their children. Further, having more positive relationships with their children is associated to parents' more frequent and intense experiences of PA and greater life satisfaction (Caprara & Steca, 2006).

Concerning parental status and overall well-being, the literature is mixed, but some research indicates that parents report more global well-being and more momentary experiences of PA compared with non-parents. Further, parents report experiencing greater PA when taking care of their children compared with times when they are not taking care of their children (Nelson, Kushlev, English, Dunn, & Lyubomirsky, 2013). Additionally, it seems that parents who are more child-centric, or who desire to increase their child's well-being even at the expense of their own, actually experience greater happiness and PA when taking care of their children compared with less child-centric parents (Ashton-James, Kushlev, & Dunn, 2013). These associations continue to hold as children age, with parents of adult children reporting greater PA than people without children (Marks, Bumpass, & Jun, 2004).

Older adulthood

As parents age, many still have positive, high quality close relationships with their adult children (see Lye, 1996 for a review), which is associated with older adults' greater subjective well-being (see Mancini & Blieszner, 1989 for a review) and increased life satisfaction (see Pinqart & Sörensen, 2000 for a meta-analysis). Researchers have hypothesized that family members contribute to older adults' happiness in several ways. First, having close family members provides opportunities for older adults to engage in meaningful caregiving. Additionally, family members often provide various types of support for older adults which can enhance well-being (see Adams & Blieszner, 1995 for a review). Beyond the aging parent–adult child relationship, some research indicates that older adults have greater well-being when relationships with other family members such as siblings and (non-custodial) grandchildren are positive (see Brubaker, 1990 for a review).

Summary of parent–child relationships and PA across the life span

Overall, this body of research indicates that both parents and children are actively influencing each other's PA across the life span, and that this is associated with the quality of their relationship. Although the majority of this research is correlational, there are still suggestions of bidirectional relations between the positive parent–child relationship and PA. For example, parents who experience higher

trait PA may provide their infants with more positive parenting experiences (e.g., Adam et al., 2004). These positive experiences may enhance the quality of the parent–child relationship (e.g., Laible, 2010), which could then lead to greater experiences of PA for both members of the dyad (e.g., Ben-Zur, 2003). This reciprocal process is likely to continue across the course of the life span, but there are gaps in the literature on such reciprocal processes for parents and their adult children. Future research should more closely examine these positive processes and associations for young and middle adult children and their middle and older adult parents. Another area that has received little attention from researchers involves the processes by which parents cultivate positive emotions in their infants, children, and adolescents, and how these processes change as children age.

Friendships

Childhood

Friendships arise and become increasingly important for socioemotional and cognitive development in childhood (Buhrmester & Furman, 1986; Hartup, 1989, 1996). Although a large amount of research has been conducted on the beneficial aspects of friendships in childhood (see Berndt, 2002 for a review), little research has specifically focused on the quality of childhood friendships in relation to PA experiences. However, it is likely that mutual positive friendships from early childhood to early adolescence are defined by shared PA (Gifford-Smith & Brownell, 2003). Relatedly, a meta-analysis of earlier research indicated that children experience and display significantly more PA with friends than with non-friends from early childhood to early adolescence (Newcomb & Bagwell, 1995).

Adolescence

Friendships continue to be important for social and cognitive development in adolescence (Hartup, 1993). During this period, intimacy also becomes an important part of friendship quality (Buhrmester, 1990), and friendship quality is associated with PA. For example, older children generally report experiencing high levels of PA with friends, and from late childhood into mid-adolescence, the levels of PA experienced with friends increases over time (Larson & Richards, 1991). Additionally, having support from friends is associated with greater PA in adolescence, with this association increasing in strength from mid- to late-adolescence (Weinstein et al., 2006). Also from mid- to late-adolescence, positive cues such as amusement and smiling are associated with closer opposite-sex friendships (Gonzaga, Keltner, Londahl, & Smith, 2001).

Emerging and young adulthood

Cross-sectional studies indicate that PA and friendship are associated in young adulthood, too. For example, young adults who consistently report high levels of happiness and trait PA spend more time with close friends, have a greater number of close friends, have more positive and satisfying friendships, and have little conflict with their friends compared with people with lower levels of happiness and trait PA (Berry, Willingham, & Thayer, 2000; Cooper et al., 1992; Demir & Weitekamp, 2007; Diener & Seligman, 2002; Oishi, Diener, & Lucas, 2007). Further, having high quality friendships predicts subjective well-being above and beyond personality characteristics and the number of friends one has (Demir & Weitekamp, 2007). Young adults who are securely attached to their friends also express positive emotions more often (Laible, 2007). Additionally, experiments indicate that friends are more likely to laugh and express PA together compared with strangers (Smoski & Bachorowski, 2003a, 2003b). Several short-term longitudinal studies also highlight links between PA and the creation and maintenance of young adult friendships. Regarding new friendships, college students who experience more state and trait PA perceive themselves as having greater overlap with their new roommate, thus indicating a closer relationship (Waugh & Fredrickson, 2006). Additionally, new college roommates who become more similar in their feelings of PA over time have more positive friendships with each other (Anderson, Keltner, & John, 2003). Feelings of gratitude also aid in friendship formation and maintenance. Specifically, people who feel more gratitude when receiving gifts from a new friend have a more positive relationship with their friend at a later time (Algoe, Haidt, & Gable, 2008), and actively expressing gratitude to a close friend increases positive perceptions of the friend (Lambert & Fincham, 2011) and the strength of the friendship (Lambert, Clark, Durtschi, Fincham, & Graham, 2010). However,

relationship processes also influence feelings of gratitude, as young adults who report feeling closer to a friend (or sibling) anticipate being more grateful to that person after receiving emotional or financial assistance from them (Rotkirch, Lyons, David-Barrett, & Jokela, 2014).

Middle adulthood

Researchers have speculated that due to the many social roles middle adults have, there is less time for friendships during this time in life (Antonucci, Akiyama, & Merline, 2001). Unsurprisingly, little empirical work has focused on friendships specifically during middle adulthood (Blieszner & Roberto, 2004). However, one study has shown that middle adults who engage in more social activities with friends have greater increases in PA and life satisfaction over time (Huxhold, Miche, & Schüz, 2014). Additionally, studies that examined happiness across wider age ranges of adults indicate that satisfying friendships and support from friends during young, middle, and older adulthood combined are associated with greater happiness (Gladow & Ray, 1986; Lyubomirsky, Tkach, & DiMatteo, 2006; Requena, 1995).

Older adulthood

Research indicates that friendships are very important for older adults' subjective well-being (Siebert, Mutran, & Reitzes, 1999), and that older adults who engage in more activities with friends have greater increases in PA and life satisfaction over time (Huxhold et al., 2014). Moreover, a meta-analysis shows that older adults report greater feelings of happiness with friends than with family (Pinquart & Sörensen, 2000). Older adults are generally dependent on friends for emotional support, and sometimes for instrumental support, especially when older adults have no family or are seeking help from someone their own age. These provisions of support are likely part of the reason why friendship is linked to well-being in older adulthood (Adams & Blieszner, 1995).

Summary of friendships and PA across the life span

The research here shows that positive relations with friends are linked to greater PA across the life span. Again, although many of the studies are correlational, there is evidence of bidirectional processes between PA and friendships. Specifically, PA aids in the formation and maintenance of positive mutual friendships (e.g., Waugh & Fredrickson, 2006), but spending time with friends also begets greater PA (e.g., Smoski & Bachorowski, 2003a). Future research should examine how these processes play out over the course of a friendship to help better demonstrate this bidirectionality, or if positive friendships and PA can spur additional benefits in adulthood. Additionally, the bulk of research on friendships and PA has been conducted with college students, so it will be important for more research to examine affective influences on and benefits of friendships across other points of the life span to help determine how associations may remain stable or change over time.

Romantic relationships

Adolescence

Romantic relationships become an important part of life in adolescence (Bouchey & Furman, 2003). Although romantic relationships are important at this age for a host of reasons (Collins, Welsh, & Furman, 2009), little research has been conducted examining the experience of PA within adolescent romances. However, related research indicates that from early- to mid-adolescence, adolescents start spending more time with the opposite-sex and report higher levels of state PA when with the opposite-sex compared with time spent with same-sex others (Richards, Crowe, Larson, & Swarr, 1998). Additionally, researchers believe that adolescent romantic ventures are often accompanied by very intense positive romantic emotions such as love (Larson, Clore, & Wood, 1999). Because romantic relationships are often influenced by previous relationship experiences, positive experiences within romantic relationships during early- to late-adolescence are also important for experiencing happiness and bonded love within romantic relationships in young adulthood (Seiffge-Krenke, 2003).

Emerging and young adulthood

Romantic relationships in emerging and young adulthood are often associated with increased PA. For example, the happiest young adults often report being in a stable romantic relationship, spending more time with their romantic partner, and having a more positive and satisfying romantic relationship (Berry & Willingham, 1997; Diener & Seligman, 2002; Oishi et al., 2007; Watson, Hubbard, & Wiese, 2000). Furthermore, simply thinking about a romantic partner leads to increased state PA, significantly more so than thinking about an opposite-sex friend or one's morning routine (Stanton, Campbell, & Loving, 2014). Additionally, high quality romantic relationships are associated with greater subjective well-being above and beyond the influence of personality characteristics, largely because of the gains in emotional security and companionship (Demir, 2008). Relatedly, young adults who are securely attached to their romantic partner experience greater state PA with others (Tidwell, Reis, & Shaver, 1996), and maximize or savor positive events more (Gentzler, Kerns, & Keener, 2010) compared with those with an insecure attachment style. Young adults who are securely attached to their partners also report experiencing both mild and intense positive emotions more frequently (Simpson, 1990) including joy, contentment, pride, love, compassion, and interest (Magai, Distel, & Liker, 1995; Shiota, Keltner, & John, 2006).

Specific positive emotions and attitudes are associated with relationship outcomes as well. For instance, couples with higher levels of commitment, relationship satisfaction, and who have similar goals also experience and display more love when interacting (Gonzaga et al., 2001; Gonzaga, Turner, Keltner, Campos, & Altemus, 2006). Additionally, high levels of trait gratitude are associated with greater intimacy in romantic relationships (Murray & Hazelwood, 2011), and instances of responsive relationship-related gratitude are associated with greater relationship satisfaction and connectedness the next day (Algoe, Gable, & Maisel, 2010), 6 weeks later (Lambert et al., 2010), and 6 months later (Algoe, Fredrickson, & Gable, 2013). Reminiscing about shared laughter also increases couples' relationship satisfaction (Bazzini, Stack, Martincin, & Davis, 2007).

Having similar levels of state PA is beneficial for dating couples because these couples are less likely to break up compared with couples who have dissimilar experiences of state PA (Anderson et al., 2003). Also, based on self-expansion theory (Aron et al., 1991), when couples are directed to engage in exciting activities together, they report higher relationship satisfaction (Aron, Norman, Aron, McKenna, & Heyman, 2000; Reissman, Aron, & Bergen, 1993). Relatedly, a study using experience sampling methodology (ESM) where participants were signaled seven times a day for a week, found that more alert active states within couples' days were linked to higher global relationship quality, and this association was mediated by their daily PA (Graham, 2008). Moreover, a romantic partner's behavior can influence one's state PA as well because when people accurately perceive or even imagine positive behaviors from their romantic partner, they subsequently report more positive mood (Gable, Reis, & Downey, 2003). Similar associations are found in young newlywed couples. For example, newlyweds who display more PA during their everyday interactions tend to be more affectionate during arguments (Driver & Gottman, 2004), and these couples who show more PA during a conflict are more likely to be happily married several years later (Gottman et al., 1998). Additionally, newlywed couples who report that they are very deeply in love across their first 2 years of marriage are less likely to get divorced and are more likely to be satisfied with their marriage up to 13 years later (Huston, Caughlin, Houts, Smith, & George, 2001).

Middle adulthood

Across adulthood, research generally indicates that those who are married or in stable long-term relationships are happier and more satisfied than individuals who are not married or in stable long-term relationships (Oishi et al., 2007; also see Coombs, 1991 for a review or Proulx, Helms, & Buehler, 2007 for a meta-analysis), and this association is found for people from a variety of countries (Stack & Eshleman, 1998). Longitudinal research indicates that there are several different reasons for this marriage effect. First, there appears to be a selection effect where people who express (Harker & Keltner, 2001) and experience greater happiness initially are more likely to get married and then stay married. However, it also seems that people often react to getting married initially with high levels of PA and life satisfaction (Lucas, Clark, Georgellis, & Diener, 2003; Marks & Fleming, 1999; Stutzer & Frey, 2006). Although people generally experience hedonic adaptation where their levels of PA and

life satisfaction eventually drop back to baseline over time, people who have extremely high levels of newlywed PA and satisfaction are more likely to keep those higher levels of PA and life satisfaction over time (Lucas et al., 2003). Other research suggests that marriage affects happiness by promoting improved health and financial stability (Stack & Eshleman, 1998). Potentially for these various reasons, it seems that marital satisfaction contributes more to general happiness than any other type of satisfaction (e.g., job satisfaction; Glenn & Weaver, 1981). Furthermore, within married couples, those who experience and express greater levels of trait PA also report greater relationship satisfaction (Watson et al., 2000) and have better relationship outcomes (Gottman & Levenson, 1992). Additionally, similar to the effects of gratitude in dating couples, feeling and expressing gratitude with one's spouse is linked to greater relationship satisfaction and happiness (Gordon, Arnette, & Smith, 2011). Moreover, research indicates that experiences of gratitude and positive romantic relationships have reciprocal associations, as positive relationship maintenance behaviors by one's partner leads to feelings of gratitude, and these feelings of gratitude lead to more positive relationship maintenance behaviors (Kubacka, Finkenauer, Rusbult, & Keijsers, 2011).

Older adulthood

The link between marital satisfaction and happiness continues into older adulthood. For example, married older adults report greater state PA (Steptoe, Leigh, & Kumari, 2011) and general life satisfaction compared with unmarried older adults (Mroczek & Spiro, 2005). Additionally, older couples who have more positive interactions report greater subjective well-being (Nezlek, Richardson, Green, & Schatten-Jones, 2002), and happy older adult couples display and experience more PA with their partner compared with unhappy couples (Carstensen, Gottman, & Levenson, 1995; Levenson, Carstensen, & Gottman, 1994). Some research suggests that the association between marriage and subjective well-being even increases in strength with age, as older married couples report more experiences of PA together compared with middle adult couples (Levenson et al., 1994). However, it is important to keep in mind that older adults represent a smaller and healthier portion of the population than those alive in young and middle adulthood given PA's link to longevity (e.g., Steptoe & Wardle, 2011; Xu & Roberts, 2010). In other words, when making inferences across varied age groups, it is critical to consider that the base rates in the population differ, and in this case, people who live to older adulthood likely differ from other aged populations in ways that are or relate to the very variables under study (Baltes, Reese, & Nesselroade, 1988). Despite this consideration, it still seems that, overall, PA is associated with romantic relationships in older adulthood.

Summary of romantic relationships across the life span

From adolescence to older adulthood, positive romantic relationships are linked to PA. However, it is clear that, again, the relations between positive romantic relationships and PA are not unidirectional, but reciprocal. Specifically, research indicates that happy people are more likely to get married, but that there are also various aspects of happy marriages that are predictive of PA (e.g., Stutzer & Frey, 2006). The research suggests that similar processes may occur in dating relationships (e.g., Diener & Seligman, 2002; Stanton et al., 2014), but future research should directly examine these reciprocal processes prior to marriage and committed romantic partnerships. Additionally, as suggested by Driver and Gottman (2004), future research should focus on designing and evaluating couple and marital interventions that aim to enhance the quality of romantic relationships by targeting minor aspects of everyday life with the goal to help couples approach daily interactions with more PA. Similar individual interventions aimed at increasing the PA that people can cultivate in their lives have been successful at treating depression (behavioral activation; e.g., Kanter et al., 2010) and helping those with serious health conditions (Moskowitz et al., 2012). Moreover, having couples reminisce about shared laughter improves relationship satisfaction, suggesting that increasing couples' shared funny moments may be especially effective to improve their relationships (Bazzini et al., 2007).

Socioemotional and biological mechanisms linking PA and close relationships

As this review demonstrates, the literature clearly indicates that there are reciprocal relations between positive close relationships and PA throughout the life span. Although the above evidence pointed to

some direct associations between PA and positive close relationships, there are also potential mechanisms that link PA and close relationships. Specifically, roles of the interpersonal regulation and coregulation of PA and a variety of biological processes are explored. A separate table is provided for the literature reviewed in this section, and this second table provides information similar to the first (see [Table 2](#)).

Interpersonal regulation and coregulation of positive emotion in close relationships

Emotion regulation is often discussed in the context of the individual (see [Gross & Thompson, 2009](#) for a review) and researchers have recently been focusing on how individuals regulate positive emotions (e.g., [Bryant & Veroff, 2007](#)). However, it is clear that many experiences of PA are interpersonal and researchers have appropriately taken action to explore interpersonal emotion regulation processes that take place within close relationships (e.g., [Butler, 2011](#); [Butler & Randall, 2013](#); [Niven, Totterdell, & Holman, 2009](#)). A variety of terms have been used to describe these processes, but two terms, interpersonal affect regulation and coregulation, which are related but different ([Butler & Randall, 2013](#)), are discussed here in the context of PA and close relationships.

Interpersonal affect regulation

[Niven et al. \(2009\)](#) have defined interpersonal affect regulation as the deliberate or involuntary regulation of another person's affect. While other researchers have used different terms, the same concept has been discussed elsewhere when one person in a dyad attempts to up-regulate or down-regulate their partner's emotions and physiological arousal (e.g., [Sbarra & Hazan, 2008](#)). Regarding PA, people may try to increase others' positive emotions by using particular positive engagement or acceptance strategies ([Niven et al., 2009](#)). Importantly for close relationships, research indicates that trying to increase another person's PA subsequently improves one's own PA in adulthood ([Niven, Totterdell, Holman, & Headley, 2012](#)) along with one's feelings of friendship and trust toward that person ([Niven, Holman, & Totterdell, 2012](#)). One interpersonal affect regulation strategy specific to PA that has recently received a significant amount attention from researchers is capitalizing.

Capitalizing: sharing positive events within close relationships. Capitalizing, or sharing positive events with others, is an interpersonal strategy for up-regulating positive emotion that most often occurs in the context of close relationships (see [Gable & Reis, 2010](#) for a review). Although capitalization has not been examined in childhood or adolescence, general capitalization research with adults (i.e., the listener is a stranger or is unspecified) indicates that sharing positive events with others leads to greater state PA and life satisfaction ([Gable, Reis, Impett, & Asher, 2004](#); [Lambert et al., 2013](#); [Langston, 1994](#); [Reis et al., 2010](#); [Verduyn, Van Mechelen, & Tuerlinckx, 2011](#)). Furthermore, research with romantic partners during young and middle adulthood has found that sharing positive events with a partner is associated with greater daily PA and life satisfaction ([Gable, Gosnell, Maisel, & Strachman, 2012](#); [Lambert et al., 2013](#)), produces feelings of love ([Gonzaga et al., 2001](#)), enhances state PA for both partners ([Hicks & Diamond, 2008](#); [Monfort et al., 2014](#)), increases relationship satisfaction ([Gable, Gonzaga, & Strachman, 2006](#); [Gable et al., 2004](#)), and promotes greater intimacy and feelings of closeness ([Gable et al., 2004](#)). Thus, capitalization generally leads to a more positive close relationship experience and greater PA, especially when partners respond to a shared positive event with enthusiasm ([Gable et al., 2004, 2006, 2012](#); [Lambert et al., 2013](#); [Reis et al., 2010](#)). Importantly, those who are securely attached, and thus likely already have a positive relationship, are more likely to perceive others as being responsive and enthusiastic during capitalization ([Shallcross, Howland, Bemis, Simpson, & Frazier, 2011](#)), and conceptually should be more likely to respond with PA when a partner shares a positive event with them ([Mikulincer & Shaver, 2005](#)). Although a majority of this research has been conducted with dating or married couples, research indicates that young adults actually share positive events with a friend most frequently, followed by a romantic partner, and then a parent ([Derlega, Anderson, Winstead, & Greene, 2011](#)). Accordingly, future research in this area should examine capitalization in the context of other close relationships and at other ages (i.e., childhood, older adulthood).

Table 2

Overview of reviewed studies in the “Socioemotional and biological mechanisms linking PA and close relationships” section.

Study	Study type ^a	N	Age ^b	Mechanism construct	Mechanism assessment or manipulation	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Socioemotional mechanisms									
Niven, Totterdell et al. (2012) – Study 1 ^c	L, C	61	M = 38, SD = 9.94	Interpersonal PA regulation	Self- and other-reported use of interpersonal affect-improving strategies	Trait PA	Affect grid	–	–
Niven, Totterdell et al. (2012) – Study 2	O, E	60	M = 19.32, SD = 2.72	Interpersonal PA regulation	Participants were instructed to improve or worsen others' affect	State PA	Momentary PA assessed using an affect grid	–	–
Niven, Holman et al. (2012) – Study 1	O, C	31	M = 34.57, SD = 8.59	Interpersonal PA regulation	Four items assessing use of four interpersonal affect-improving strategies	–	–	Friendship and trust	Two items asking to identify friends and who they trusted within the network
Niven, Holman et al. (2012) – Study 2	L, C	56	G1: M = 37.11, SD = 10.8 G2: M = 39.25, SD = 7.77	Interpersonal PA regulation	Four items assessing use of four interpersonal affect-improving strategies	State PA	PA caused by particular person within network	Friendship and trust	Two items asking to identify friends and who they trusted within the network
Gable et al. (2004) – Study 1	STL, C, Daily	154	17–26 (M = 19.7, SD = 1.3)	Capitalization	Single item assessing how much they let others know about their most positive event of the day	State PA; Life Satisfaction	PANAS; Satisfaction with Life Scale	–	–

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Table 2 (continued)

Study	Study type ^a	N	Age ^b	Mechanism construct	Mechanism assessment or manipulation	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Gable et al. (2004) – Study 2	O, C	59 dyads	College students	Perceived responses to capitalization	Perceived Responses to Capitalization Attempts Scale	–	–	Relationship commitment; satisfaction; trust; intimacy	Commitment Scale; Relationship Assessment Scale; Trust Scale; PAIR Intimacy Scale
Gable et al. (2004) – Study 3	STL, C, Daily	89 dyads	21–73 (M = 38.1, SD = 10.1)	Perceived responses to capitalization	Perceived Responses to Capitalization Attempts Scale	–	–	Marital satisfaction and intimacy	Quality Marriage Index; PAIR Intimacy Scale
Lambert et al. (2013) – Study 1	STL, C, Daily	260	18–41 (median = 19)	Capitalization	Two items assessing if they shared a positive event with a partner or with others	Trait PA; Life Satisfaction	PANAS; Satisfaction with Life Scale	–	–
Lambert et al. (2013) – Study 2	O, E	96	18–24 (median = 19)	Capitalization	Lab-based positive event disclosure with partner	State PA	PANAS	–	–
Lambert et al. (2013) – Study 3	O, E	186	College students	Capitalization	Lab-based positive event disclosure with partner	Trait happiness	Single item assessing trait happiness	–	–
Lambert et al. (2013) – Study 5	O, E	106	18–25 (median = 21)	Responses to capitalization	Active-constructive vs. passive or destructive responses	Expressed PA	Written responses coded for feelings of love, appreciation, and happiness	–	–
Reis et al. (2010) – Study 2	O, E, Obs	83	M = 20.44	Responses to capitalization	Active-constructive vs. passive-constructive feedback	State PA	Brief Mood Introspection Scale	–	–

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Table 2 (continued)

Study	Study type ^a	N	Age ^b	Mechanism construct	Mechanism assessment or manipulation	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Reis et al. (2010) – Study 5	STL, C, Daily	214	M = 19.89, SD = 1.39	Capitalization and perceived responses	Single item assessing capitalization attempt and Perceived Responses to Capitalization Attempts Scale	–	–	Prosocial orientation toward partner	Three items assessing prosocial orientation
Gable et al. (2012) – Study 2	STL, C, Daily	67 dyads	M = 25.16 SD = 6.33	Capitalization and perceived responses	Item assessing if daily positive event was disclosed to partner and three items assessing partner's response	Daily PA; Daily life satisfaction	Four positive emotion words; Satisfaction with Life Scale (reworded for daily)	Relationship satisfaction; connection; security	Two items for both satisfaction and connection; Four items for security
Gonzaga et al. (2001) – Study 1	L, C, Obs	60 dyads	College students	Capitalization	Lab-based positive event disclosure	State love	Self-reported feelings of momentary love PANAS	–	–
Hicks and Diamond (2008)	STL, C, Daily	48 dyads	20–52 (M = 27, SD = 7)	Capitalization	Item assessing if daily most positive event was disclosed to partner	State PA	–	–	–
Monfort et al. (2014)	O, E, Obs	69 dyads	M = 21.72, SD = 1.91	Capitalization and perceived responses	Lab-based positive event disclosure and response	State PA; PA expression	PANAS; observed happy expressions	–	–
Gable et al. (2006)	L, C, Obs	79 dyads	W: M = 21.3, SD = 2.69 M: M = 22.2, SD = 2.80	Capitalization and perceived responses	Lab-based positive event disclosure and Perceived Responses to Capitalization Attempts Scale	–	–	Relationship satisfaction and commitment	Relationship Satisfaction Scale; Investment Model Scale
Shallcross et al. (2011)	O, C, Obs	101 dyads	W: M = 19.75, SD = 1.37 M: M = 20.96, SD = 2.52	Capitalization and perceived responses	Lab-based positive event disclosure and Perceived Responses to Capitalization Attempts Scale	–	–	Secure attachment style	Adult Attachment Questionnaire

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Table 2 (continued)

Study	Study type ^a	N	Age ^b	Mechanism construct	Mechanism assessment or manipulation	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Derlega et al. (2011)	O, C	409	$M = 21.01$, $SD = 2.91$	Capitalization	Self-report of capitalization	–	–	Relationship type	Self-report of to whom they disclosed
Feldman (2003)	O, C, Obs	100	5 months ($M = 20.51$ wk, $SD = 3.14$)	PA coregulation	Observed parent–infant synchrony and coregulation of PA	PA expression	Orientation, intensity, and temporal pattern of positive arousal	–	–
Feldman (2007b)	L, C, Obs	86	T1: $M = 20.51$ weeks T2: $M = 33.5$ months	PA coregulation	Observed parent–infant synchrony and coregulation of PA	PA expression	Orientation, intensity, and temporal pattern of positive arousal	–	–
Lunkenheimer et al. (2011)	L, C, Obs	167	T1: 3 T2: 5.5	PA coregulation	Observed parent–child coregulation of PA	PA expression	Observed PA intensity	–	–
Saxbe and Repetti (2010)	STL, C, Daily	30 dyads	28–58 (median = 41)	PA coregulation	Associations between husband and wife PA	State PA	Self-report on 25 affective items	–	–
Schoebi (2008)	STL, C, Daily	166 dyads	W: $M = 44.2$, $SD = 4.8$ M: $M = 46.2$, $SD = 5.3$	PA coregulation	Associations between husband and wife PA	State PA	Two self-report items of momentary PA	–	–
Butner et al. (2007)	STL, C, Daily	48 dyads	20–52 ($M = 27$, $SD = 7$)	PA coregulation	Covariation in state PA	State PA	PANAS	Time spent together	Amount of time spent together
Biological mechanisms Bacher (2014)	L, E	74	T1: 4 months T2: 12 months	Dopamine system activity	Observed spontaneous eye blinking	PA expression	Observed smiling or positive vocalization	–	–

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Table 2 (continued)

Study	Study type ^a	N	Age ^b	Mechanism construct	Mechanism assessment or manipulation	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Depue et al. (1994)	O, E	11	20–36 (<i>M</i> = 28.3, <i>SD</i> = 3.1)	Dopamine activity	Ingestion of bromocriptine or placebo capsules	State PA	Six self-report ratings of momentary affect	–	–
Atzil et al. (2011)	O, C, Obs	23	23–27	Nucleus accumbens and amygdala activity	Mothers viewed infant-related video vignettes while in an fMRI scanner	–	–	Mother–infant synchrony	Synchronous vs. intrusive mothers
Bartels and Zeki (2004)	O, E	20	27–49 (<i>M</i> = 34)	Activity in brain's reward system	Mothers viewed pictures of their own and other children and their best friend and other adults while in an fMRI scanner	State love	Momentary love felt for people viewed during scans (rated post-scan)	–	–
Acevedo et al. (2012)	O, E	17	39–67 (<i>M</i> = 52.85)	Activity in reward and motivation brain regions	Viewed picture of partner vs. close friend vs. familiar acquaintance vs. non-familiar acquaintance	Long-term romantic love	Passionate Love Scale; Eros subscale of the Love Attitudes Scale	–	–
Aron et al. (2005)	O, E	17	18–26 (<i>M</i> = 20.6)	Activity in reward and motivation brain regions	Viewed picture of partner vs. familiar other	Feelings of romantic love	Interview assessing duration, intensity, and range of romantic love	–	–
Bartels and Zeki (2000)	O, E	17	21–37 (<i>M</i> = 24.5)	Activity in reward and motivation brain regions	Viewed picture of partner vs. friends	Feelings of passionate love	Short version of the Passionate Love Scale	–	–

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Table 2 (continued)

Study	Study type ^a	N	Age ^b	Mechanism construct	Mechanism assessment or manipulation	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Xu et al. (2011)	L, E	18	19–25 (<i>M</i> = 21.61, <i>SD</i> = 1.75)	Activity in reward and motivation brain regions	Viewed picture of partner vs. familiar other	–	–	Relationship status; relationship happiness	Still together vs. not; single-item assessing relationship happiness
Feldman et al. (2007)	L, C, Obs	62	18–43 (<i>M</i> = 27.8)	Oxytocin levels	Blood samples	Mother state PA during infant interactions	Observed and coded using the Coding Interactive Behavior Manual – Newborn Version	–	–
Feldman et al. (2010)	O, C	55	4–6 month old infants and parents: <i>M</i> = 28.95	Oxytocin levels	Blood and saliva samples	State PA	Observed parent and infant PA	–	–
Gordon et al. (2008)	O, C	45	<i>M</i> = 24.63, <i>SD</i> = 3.16	Oxytocin levels	Blood samples	–	–	Relationship quality with parents	The Parental Bonding Instrument
Holt-Lunstad, Birmingham, and Light (2008)	L, E	34 dyads	20–39 (<i>M</i> = 25.2, <i>SD</i> = 3.8)	Oxytocin levels; ambulatory blood pressure	Blood samples; 24-hour ambulatory blood pressure	–	–	Intervention-based increase in warm touch for couples	Intervention group vs. “monitoring only” control group

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Table 2 (continued)

Study	Study type ^a	N	Age ^b	Mechanism construct	Mechanism assessment or manipulation	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Ditzen et al. (2009)	O, E	47 dyads	20–50	Oxytocin levels	Intranasal oxytocin vs. placebo	–	–	Verbal and nonverbal behavior during conflict discussion	Observed positive behavior coded using an adapted version of the SPAFF and the Coding System for Marital and Family Interactions
Grewen et al. (2005)	O, C	38 dyads	20–49	Oxytocin levels	Blood samples	–	–	Perceived partner support	Social Relationships Index (spousal version)
Stephoe and Wardle (2005)	L, C	162	47–59	Systolic blood pressure	Repeated measures of blood pressure throughout the day	State PA	Single-item assessing momentary happiness	–	–
Kok and Fredrickson (2010)	L, C, Daily	73	21–68 (M = 37.3)	Vagal tone	Respiratory sinus arrhythmia	State PA	Differential Emotions Scale	Social connectedness	Two items adapted from UCLA Loneliness Scale
Oveis et al. (2009)	L, C	80	M = 20.0	Vagal tone	Respiratory sinus arrhythmia	Trait PA	PANAS	–	–

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Table 2 (continued)

Study	Study type ^a	N	Age ^b	Mechanism construct	Mechanism assessment or manipulation	PA construct	PA assessment or manipulation	Relationship construct	Relationship assessment or manipulation
Stephoe et al. (2012)	O, C	7795	50 or older	Various measures of physical health	Dehydroepiandrosterone sulfate; Inflammatory markers; HDL cholesterol; Plasma triglycerides	Affective well-being	Enjoyment of life subscale, Control, Autonomy, Self-realization, and Pleasure questionnaire	–	–
Holt-Lunstad, Birmingham, and Jones (2008)	O, C	303	20–68	Ambulatory blood pressure	24-hour ambulatory blood pressure	Satisfaction with life	Satisfaction with Life Scale	Marital relationship quality	Marital Adjustment Test and Dyadic Adjustment Scale
Kok et al. (2013)	L, E, Daily	65	M = 37.5	Vagal tone	Respiratory sinus arrhythmia	State PA	Self-report of nine momentary positive emotions PANAS	Social connectedness	Two items adapted from UCLA Loneliness Scale
Hankin et al. (2011) – Studies 1–3	O, C, Obs	1874	9–15	5-HTTLPR genotype	Genotyping	Trait PA		Positive and supportive parenting	Alabama Parenting Questionnaire, Emotional Warmth Scale observed parent–child interactions

^a The first study type listing indicates if the study was longitudinal (L), short-term longitudinal (STL), or just had one age group at one time point (O). The second listing indicates if the study was correlational (C) or experimental (E). If there is a third listing, it indicates specific methodology used (Obs = observational, Daily = daily diaries).

^b When reported, age range, mean (M), and standard deviation (SD) are all presented. Unless otherwise indicated, age is in years. T1 = time 1; W = women; M = men; G = group or cohort.

^c References are listed in the order they appear in the text.

Coregulation

Coregulation refers to the bidirectional interconnectedness of emotions within a dyad and implies that one person's emotional experiences, expressions, and physiological arousal are inherently linked to that of the other (Butler, 2011; Butler & Randall, 2013). Coregulation of PA occurs as early as infancy when mothers and fathers play a major role in facilitating their infants' regulation of state PA. Often this occurs face-to-face with parents creating and subsequently coregulating their infants' state PA by synchronizing their own affective arousal and expressions with those of their infant (Feldman, 2003, 2007a; also see Feldman, 2007b). Parents continue to coregulate state PA with their children as they get older, which benefits children by preventing behavioral problems over time (Lunkenheimer, Olson, Hollenstein, Sameroff, & Winter, 2011). Although not all research has found evidence for the coregulation of state PA throughout adulthood (e.g., Saxbe & Repetti, 2010), other research has (e.g., Schoebi, 2008). For example, married and cohabitating couples' PA covaries in that as one person's state PA increases, the other person's state PA increases, especially on days when the couple spends more time together (Butner, Diamond, & Hicks, 2007).

Summary of interpersonal affect regulation and coregulation of PA

Overall, these socioemotional processes seem to be important across the life span. Although little research has been conducted early in the life span on these topics, the available data indicate that parents do play an important role in coregulating their infants' and children's PA (e.g., Feldman, 2003; Lunkenheimer et al., 2011). However, although children and adolescents share PA and positive news with friends and family, little is known about children's and adolescents' capitalization efforts and perceived responses from family and friends. Recipients' responses may affect the children's and adolescents' state PA, but also likely contribute to their developing regulatory strategies. The evidence throughout young and middle adulthood is quite strong, though, showing that within close relationships (especially romantic relationships), adults of these ages often use interpersonal affect regulation strategies such as capitalization (e.g., Gable et al., 2004) and coregulation of PA (e.g., Butner et al., 2007). Additionally, it is likely that similar socioemotional processes occur within older adults' relationships, though limited research has examined this. In summary, the processes of interpersonal affect regulation and coregulation likely act as mechanisms linking one close relationship partner's PA to the other, and thus serve to enhance PA within the close relationship.

Biological processes

There are a variety of biological measures that researchers can assess in studies of social and emotional experience including neurological, endocrine, cardiovascular, and genetic measures. While biologically-based studies rarely focus on both PA and positive relationship experiences, the literature on the biology of PA (see Steptoe, Dockray, & Wardle, 2009 or Dockray & Steptoe, 2010 for a review) and the biology of positive social processes (see Uchino, Cacioppo, & Kiecolt-Glaser, 1996 for a review) indicate that there are similar biological processes at work in each of these positive experiences. Moreover, research suggests that PA (e.g., Pressman & Cohen, 2005) and social processes (e.g., Cole, 2009) can actually influence biological functioning, which is in line with Ryff and Singer's earlier (2000) push for investigating positive health outcomes of interpersonal flourishing. Taken together, this research highlights biological ways that PA and close relationships may be mutually influencing each other.

Neurological measures

Regarding neurological activity, the dopaminergic reward circuit of the brain has received attention from social and affective researchers alike. Concerning PA, infants who demonstrate moderate levels (compared with lower or higher levels) of spontaneous eye blinking, which is believed to reflect dopamine system functioning, display more PA and smiling (Bacher, 2014). Additionally, trait positive emotionality has been linked to dopamine activity in adults (Depue, Luciana, Arbisi, Collins, & Leon, 1994; see Depue & Collins, 1999 for more). Concerning positive close relationship encounters, mothers who coordinate their PA and social gaze with that of their infant have greater activation of part of the dopamine system compared with more intrusive mothers (Atzil, Hendler, & Feldman, 2011). Other research indicates that both maternal (Bartels & Zeki, 2004) and romantic love (Acevedo, Aron,

Fisher, & Brown, 2012; Aron et al., 2005; Bartels & Zeki, 2000; Xu et al., 2011) activate specific regions of the brain's reward system for adults. Examining PA and social processes in combination, research indicates that both PA and approach motivation (which may be associated with social rewards, Gable & Strachman, 2008) are associated with greater left frontal cortical activity (see Harmon-Jones, Price, Gable, & Peterson, 2014 for a review).

Endocrine measures

There are also a variety of hormones involved in positive social bonding processes. For example, oxytocin is a hormone implicated in birth and nursing, and is linked to adaptive maternal care and more generally to positive social affiliation (see Heinrichs, von Dawans, & Domes, 2009 or Campbell, 2010 for reviews). Some research suggests that oxytocin plays a large role in facilitating social reward (Atzil et al., 2011) and promoting positive encounters within close relationships (see Feldman, 2012 for a review). For example, mothers who have higher levels of oxytocin during and after pregnancy subsequently display more PA when interacting with their infant (Feldman, Weller, Zagoory-Sharon, & Levine, 2007). Additionally, mothers' and their infants' levels of oxytocin are related, and oxytocin levels are higher in mother–infant dyads that display more state PA and positive engagement (Feldman, Gordon, & Zagoory-Sharon, 2010). In young adulthood, positive relationships with parents have been linked to higher levels of oxytocin (Gordon et al., 2008), and within adult romantic relationships, positive affiliation cues and expressions such as smiling (Gonzaga et al., 2006) and loving contact (Holt-Lunstad, Birmingham, & Light, 2008) are associated with the release of oxytocin. Oxytocin also increases positive communication in adult couples (Ditzen et al., 2009), and is linked to higher levels of partner support (Grewen, Girdler, Amico, & Light, 2005). However there is likely a more complex relationship between oxytocin and distinct relationship qualities (Bartz, Zaki, Bolger, & Ochsner, 2011), because other research suggests that elevated oxytocin in adult women is linked to distress within their relationships (Tabak, McCullough, Szeto, Mendez, & McCabe, 2011; Taylor, Saphire-Bernstein, & Seeman, 2010). Still, the majority of this emerging research suggests that oxytocin may enhance well-being due to its role in positive close relationships (see IsHak, Kahloon, & Fakhry, 2011 for a review).

Cardiovascular measures

Cardiovascular measures (e.g., blood pressure, vagal tone) serve as indices of health and physiological arousal and are associated with both relationships and PA. Concerning PA, lower systolic blood pressure has been linked to greater happiness (Steptoe & Wardle, 2005) and high vagal tone has been linked to increased state and trait PA in adulthood (Kok & Fredrickson, 2010; Oveis et al., 2009). Additionally, more general affective well-being is associated with older adults' lower levels of plasma triglycerides, as well as less inflammatory markers and greater HDL-cholesterol for women and greater dehydroepiandrosterone sulfate for men, all of which are indicators of better physical health (Steptoe, Demakakos, de Oliveira, & Wardle, 2012). Regarding relationships, married adults have greater blood pressure dipping at night (which is linked to better health outcomes) compared with unmarried individuals, but the quality of marital interactions also matters in that those within high-quality marriages have lower ambulatory blood pressure (Holt-Lunstad, Birmingham, & Jones, 2008). Relatedly, another study demonstrated that as amounts of loving contact with wives increased, husbands' systolic blood pressure decreased (Holt-Lunstad, Birmingham, & Light, 2008). Some research indicates that there are reciprocal relations between physiology, PA, and positive relationships, with high-frequency heart rate variability (vagal tone or respiratory sinus arrhythmia) being particularly relevant to people's feelings of PA. Specifically, adults with high vagal tone have larger and more rapid increases in PA and social connectedness over time, and those increases in PA and social connectedness subsequently lead to higher vagal tone (Kok & Fredrickson, 2010). Further research indicates that positive social connections mediate the link between increased PA and higher vagal tone (Kok et al., 2013).

Genetic measures

Genes are a newer area of research to potentially connect PA and close relationships. For example, recent research indicates that our positive social experiences have favorable epigenetic influences on gene expression (see Champagne, 2010; Cole, 2009; and Slavich & Cole, 2013 for reviews). Additionally, the 5-HTTLPR genotype has been linked to individual differences in PA and positive close

relationships. Specifically, in direct support of differential susceptibility theory (Belsky & Pluess, 2009), older children and early adolescents who are homozygous for the short allele of the serotonin transporter gene (5-HTTLPR) experience greater PA when their parents use positive and supportive parenting behaviors, but less PA without exposure to positive parenting (Hankin et al., 2011). However, as this research is still in its early stages, more needs to be understood about genetic and epigenetic processes regarding PA and positive relationships across the life span.

Summary of biological processes

Overall, there are a variety of biological processes involved in both experiences of PA and positive close relationships. However, this literature is sparse, especially for the earlier and later ages of the life span (see Table 2 to determine exact age ranges for the study samples reviewed here), and it is difficult to pinpoint age patterns given the current state of this newer area of research. Because it is possible that these biological processes either serve as a third variable (i.e., they influence both the experience of PA and the likelihood of establishing positive close relationships), or partially mediate the associations between PA and close relationships, future research should focus on examining precisely how PA and close relationship experiences could indirectly influence each other via these biological processes. For example, longitudinal and experimental research could be used to test models where positive close relationship processes influence biological processes which then influence PA, as well as models that work in the opposite direction. An example research question could be: Do changes in oxytocin levels mediate the association between close relationship processes and PA, where positive relationship interaction lead to increased oxytocin levels and increased oxytocin levels lead to greater PA? However, other plausible models should be investigated. For instance, considering biology as the third variable, people who are higher in behavioral activation sensitivity (Gray, 1987) could seek out and create more positive experiences (Gable, Reis, & Elliot, 2000) within their close relationships, and also react with more intense PA to these experiences as compared with those lower in behavioral activation sensitivity. A second model to consider is if the effects of positive relationship processes on biology are actually mediated by PA (i.e., relationship processes increase PA which positively affects health). This model with PA as a mediator may be more likely for particular relationship processes, such as shared humor (Bazzini et al., 2007) or a warm touch or massage (Holt-Lunstad, Birmingham, & Light, 2008), as compared with processes like intimacy, where some self-disclosure could produce NA or negative arousal in the short term but have positive health effects regardless (e.g., Pennebaker, Zech, & Rimé, 2001). Research should also assess how various biological processes might interact (e.g., how oxytocin levels and heart rate variability interact; how the effects of oxytocin may differ for people with different gene expressions). Finally, future research should examine whether or not the influence and magnitude of certain biological processes change with age. For example, previous research indicates that older adults are less physiologically reactive in terms of heart rate but are more reactive in terms of systolic blood pressure during emotional tasks compared with adults of younger ages (see Uchino, Birmingham, & Berg, 2010 for a meta-analysis). It is possible that other age differences in reactivity exist (e.g., adolescents compared with adults) or that there are age differences for other biological processes (e.g., neurological activity).

Conclusions and future directions

This review has demonstrated that despite changes in experiences of PA and variations in the types of close relationships one has across the life span, the bidirectional associations between positive close relationships and PA are apparent at each stage of life. Importantly, this finding is consistent across different types of close relationships including parent–child relationships, friendships, and romantic relationships. Additionally, there is a similar pattern for different assessments of PA (e.g., experience and expression of state PA, trait PA, life satisfaction, discrete positive emotions such as gratitude) and different assessments of positive relationship indices and processes (e.g., secure attachment, relationship satisfaction) throughout the life span. Moreover, there is strong support for the bidirectionality of these associations throughout the life span. Although they are less prevalent, there are still quite a few longitudinal ($n = 37$, not including short-term longitudinal studies) and experimental studies ($n = 16$) reviewed that provide evidence of the reciprocal associations between PA experiences and positive

close relationships (see [Table 1](#) to easily identify which studies were longitudinal and/or experimental). Importantly, this evidence appears at all ages of the life span and for each of the close relationships reviewed. Finally, this review highlights several areas that may serve as partial mechanisms linking close relationships and PA, including the interpersonal regulation and coregulation of positive emotion and the biological factors implicated in PA and positive close relationships. Overall, it is clear that experiences of PA and positive close relationships have mutual influences on each other throughout the life span, both directly and indirectly, resulting in an upward spiral over time. This reciprocal causal association underscores the significance of both PA and positive close relationships for overall health and well-being and may have important implications for interventions to enhance well-being in both clinical and community settings.

Strengths of the literature

This literature as a whole is strengthened by the breadth of information researchers have gathered thus far. For example, each period of the life span, each type of close relationship, and the various ways to measure PA are fairly well represented across the literature. Not surprisingly, self-reported experiences of PA and relationships remain the norm. However, even with self-report surveys, many studies have involved innovative designs where participants are reporting on PA or relationships multiple times a day using ESM ($n=6$; e.g., [Graham, 2008](#); [Nelson et al., 2013](#)), multiple days in a row using daily diary methodology ($n=15$; e.g., [Gordon et al., 2011](#); [Larson & Richards, 1991](#)), or in the lab following an interaction with a parent (e.g., [Diamond et al., 2012](#)) or romantic partner (e.g., [Gable et al., 2006](#)). Although correlational, these designs allow researchers to get at immediate or time-sensitive effects of PA and dyadic exchanges without being too intrusive or disrupting the interactions. Observational methods have also been used in the lab across many of the age groups and relationship types to move beyond a reliance on self-report data ($n=25$), including with infants and parents (e.g., [Roque & Verissimo, 2011](#)), children and parents (e.g., [Isley et al., 1999](#)), adolescents and young adults with friends and romantic partners (e.g., [Gonzaga et al., 2001](#)), and adults and partners (e.g., [Gable et al., 2006](#)). Additionally, as more researchers begin using multi-method approaches to assess emotions and relationships (e.g., [Feldman et al., 2007](#); [Hankin et al., 2011](#)), studies incorporating biological indices are becoming more common. This literature is also strengthened by the attention to age-appropriate methodology. Infancy research is more limited, with methodology focusing largely on observational data (e.g., infants' PA expressions; [Waters et al., 1979](#)) and some incorporating biological assessments (e.g., [Feldman et al., 2010](#)). However, with increasing ages of the participants, the methodology becomes more diverse such that older children and adults are able to self-report their PA or relationship experiences using guided interviews (e.g., [Kerns et al., 2007](#)) or surveys (e.g., [Diener & Seligman, 2002](#)).

Finally, this literature is strengthened by evidence that the links between PA and positive relationships are not just due to the absence of NA. For example, many of the reviewed studies controlled for NA and still demonstrated associations between PA and positive relationships above and beyond the effects (or absence) of NA (e.g., [Berry et al., 2000](#); [Watson et al., 2000](#)). Additionally, some studies examined affect balance, or the ratio of PA to NA, to account for the effects of NA (e.g., [Caprara et al., 2006](#); [Diener & Seligman, 2002](#)). Other studies examined both PA and NA and found that, although PA was associated with relationship processes and outcomes, NA was not or was not as strongly (e.g., [Gable et al., 2004](#); [Sorce et al., 1985](#)). Overall, these empirical findings offer strong evidence that PA is uniquely relevant to positive qualities within close relationships. Although considerable intervention efforts are devoted toward decreasing NA and conflict within close relationships (for very good reasons), this literature suggests that increasing positive relationship processes may independently enhance dyads' experience of PA and vice versa.

Limitations and future directions

Despite the strengths of the literature, there are also important conceptual and methodological limitations that must be addressed. An obvious limitation is that the association between PA and close relationships needs to be more closely examined for several age groups within particular

relationship types (e.g., young adult relationships with parents, middle adult friendships, and adolescent romantic relationships).

Another obvious limitation is that many of the studies were correlational and thus do not imply causation. Therefore, we are not able to infer reciprocal associations between PA and positive close relationships from these studies as the associations could be due to a third variable. Although many studies examined just one age group at one time point, or involved cross-sectional, correlational designs, these types of studies are often the first step in research on topics of this nature. Now we can expect to see an increase in longitudinal, sequential, and experimental designs due to the solid base of research to date. Longitudinal and sequential work will allow researchers to specifically address questions about the stability of associations between PA and close relationship processes over time and whether PA and close relationships are more strongly intertwined during certain times in the life span (e.g., Levenson et al., 1994). Some innovative studies have already employed longitudinal (e.g., Kochanska, 2001; Richards et al., 1998) or sequential designs (e.g., Weinstein et al., 2006). Experimental research is needed to directly test bidirectional effects between PA and positive close relationships (although it is not possible to manipulate and examine both directions in the same study), and will be particularly useful for confirming that each factor directly influences the other and that PA and positive relationships are not just associated due to the influence of a third variable (see Aron et al., 2000 or Silvers & Haidt, 2008 for examples). Further, if researchers combine longitudinal and experimental methodology, this will allow for direct testing of cross-lagged effects of PA on relationships and relationships on PA over time (see Fredrickson et al., 2008 for an example).

An additional area of inquiry concerns the conceptualization and measurement of PA. Much of the reviewed research measured PA by assessing experiences of a variety of positive emotions and aggregating across the distinct emotions to form one PA construct ($n = 101$) rather than focusing on a particular positive emotion or the differences between discrete positive emotions ($n = 22$; see Tables 1 and 2 to quickly determine which studies focused on aggregate vs. discrete PA). Although often times distinct positive emotions (e.g., joy vs. contentment vs. pride) are treated as less distinct than are negative emotions (e.g., sadness vs. anger vs. fear), as research uncovers more about how particular positive emotions differ (Fredrickson, 1998b; Shiota et al., 2006), relationship research may be strengthened by focusing on how specific positive emotions are differentially linked to relationship quality.

Another issue is that some of the research focuses on only one member of the dyad. Future research should place more emphasis on dyadic data collection and analysis. Additionally, collecting data on a dyad at only one point in time is problematic, as couples are a dynamic system and do not engage in the same behaviors indefinitely (Butler, 2011; Butler & Randall, 2013). Thus, research that obtains only a snapshot of a dyad's interactions is likely missing important information. A further issue is that the research is largely focused only on dyadic outcomes and processes, consequently leaving close relationship groups largely unstudied. For example research could examine close friend group dynamics or interactions among whole families (e.g., Gordon & Feldman, 2008). Overall, more nuanced research taking a dynamic systems approach is needed to allow for a better understanding of the brief, momentary processes that contribute to the development and maintenance of positive close relationships and close groups (Reis et al., 2000).

A similar limitation of this area of research is that most of the reviewed studies examined only one type of close relationship. However, the elaborate reality is that people are often part of multiple relationships at once, and they are often interconnected and evolving together. Unfortunately, current relationship research regarding associations with PA generally fails to capture these complex dynamics (Gable & Reis, 1999). Thus, we are still missing answers to important questions. For example, does a particular type of close relationship have a stronger association with PA compared with other close relationships, and does this change across context and across the course of the life span (e.g., Fehr & Harasymchuk, 2005; Gauze, Bukowski, Aquan-Assee, & Sippola, 1996; Wrzus, Wagner, & Neyer, 2012)? Combining methodology from the convoy model of social relations (e.g., using network mapping procedures; Antonucci, 1986) with affective and developmental methodology would be beneficial in this regard, thus allowing for the examination of the associations between patterns of close relationships and PA across a period of time (e.g., Antonucci, Akiyama, & Takahashi, 2004; Birditt & Antonucci, 2007).

Another area ripe for future research involves individual differences in the way PA relates to positive close relationships. For example, we do not yet know how associations between PA and positive

close relationships differ by factors such as gender, socioeconomic status, race, ethnicity, or culture. Relatedly, differential susceptibility (Belsky & Pluess, 2009) and vantage sensitivity (Pluess & Belsky, 2012) should also be examined in the context of PA and close relationships, as it is possible that some people benefit more from PA or positive close relationships (see Hankin et al., 2011 for an example) or that these factors are more strongly associated for some due to increased susceptibility. Additionally, incorporating people's emotional goals or ideal affect into the close relationship literature can be useful to understand the implications of how people want to feel themselves or how they want others (e.g., children, romantic partners) to feel. As one example, consistent with Tsai's affect valuation theory on the importance of ideal affect in influencing one's behavior (Tsai, 2007), mothers' ideal PA for themselves and their children predicted mothers' reports of how they responded to their child's PA and positive events (Gentzler, Palmer, Yi, & Root, 2014).

There are also a number of possible contextual influences on the associations between positive affect and close relationships that are largely unexamined. For example, future research should test non-linear associations given that in some instances, non-linear patterns may better capture trends in PA across age groups (e.g., Ramsey & Gentzler, 2014), or that moderate levels of PA may be more beneficial within certain relationships or contexts compared with very low or high PA (e.g., Oishi et al., 2007). Relatedly, research could examine if positive effects taper off at higher levels of either relationship quality or PA. Other contexts such as couple ambivalence (i.e., co-occurrence of positive and negative processes; Uchino, Holt-Lunstad, Uno, & Flinders, 2001) should also be considered in future research, as what is beneficial for one dyad may be harmful for another (Lambert et al., 2011; McNulty & Fincham, 2012). Culture is another important contextual consideration given that the type of PA that is valued (e.g., low- vs high-arousal) may vary across cultures (Tsai, 2007), resulting in very different meanings assigned to similar expressions or experiences of emotions within close relationships. Finally, as discussed by Mikulincer and Shaver (2005), it may be essential to consider the source of individuals' PA because relationship-relevant happiness could have very different effects on the partner compared with relationship-irrelevant happiness. Relationship-relevant happiness could be credited to one's partner and elicit shared love or joy (or possibly hubris for more avoidantly attached partners or ambivalent feelings including unworthiness for more anxiously attached partners). In contrast, relationship-irrelevant happiness may elicit empathic joy (Clark, Fitness, & Brissette, 2001) in more secure individuals, but envy and hostility in more avoidant partners, or be perceived as threatening and elicit anxiety and fear of separation in more anxious partners (Mikulincer & Shaver, 2005).

Final notes

Although the focus of this review has been on close relationships, it should also be noted that even interacting with weak social ties can enhance one's PA (Sandstrom & Dunn, 2014a, 2014b). In a related vein, we have focused on positive features of close relationships, but close relationships can often be negative and have poor outcomes (e.g., Antonucci, Akiyama, & Lansford, 1998; Rook, 1984). This begs the question of what types of PA outcomes people with both positive and negative relationships have (e.g., Fincham & Linfield, 1997; Mattson, Paldino, & Johnson, 2007). Additionally, more research should examine how ambivalent relationships (high in both positive and negative aspects; Uchino et al., 2001) are associated with PA. Previous research indicates that ambivalent relationships are associated with worse health (measured via cardiovascular functioning, inflammation, and genetic risk; Uchino et al., 2001, 2012, 2013); therefore, it is possible that a high number of negative feelings and processes within relationships cancel out the good effects of positive processes in ambivalent relationships. We must also clarify that even those in categorically positive close relationships do still sometimes experience NA and other negative relationship processes within that relationship. For example, one key difference between happily married couples and couples at risk for divorce is that happily married couples have a higher ratio of PA to NA, but they still of course express and experience NA (e.g., Gottman et al., 1998). However, it is unclear whether those with higher quality relationships differ just in their frequency of PA or if they also differ in the types of PA they experience or the contexts in which PA is felt.

It is also important to recognize the limits of PA in that PA is not adaptive for all circumstances and that too much focus on achieving PA may actually impede one's ability to experience it (Gruber,

Mauss, & Tamir, 2011; Mauss et al., 2012). Additionally, others' more negative reactions to a person's experiences of PA can lead to negative outcomes within the relationship and can lead to reduced experiences of PA. For example, when mothers invalidate the importance of their adolescents' positive events or dampen and decrease their adolescents' PA, adolescents are often at greater risk for depression (Katz et al., 2013; Yap, Allen, & Ladouceur, 2008; Yap, Schwartz, Byrne, Simmons, & Allen, 2010). Relatedly, when romantic partners react negatively to their partner's sharing of a positive event, relationship well-being suffers (e.g., Gable et al., 2004). Moreover, despite our focus on PA, it must also be highlighted that experiencing NA is not always bad. For example, experiencing negative emotions increases children's understanding of emotions and enhances socioemotional functioning if their parents discuss the emotions and the causes with them (Dunn & Brown, 1994). Additionally in adulthood, expressing negative emotions to close others serves a necessary function within relationships and is sometimes associated with positive outcomes (e.g., Graham, Huang, Clark, & Helgeson, 2008; Rimé, 2009). This review must be understood in light of these contextual variations, and future research must examine these contextual variations further in regard to affective experiences and close relationships.

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