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RESEARCH SUMMARY*

The Heart of Helping:

Psychological and Physiological Effects of Contrasting Coaching Interactions

by

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ABSTRACT

This study tested distinctions in the physiological, cognitive, emotional and relational mechanisms at play during different types of coaching interactions. An experimental, within subject design was used to compare individuals' responses to coaching conversations characterized by (1) the Positive Emotional Attractor (PEA), in which the coach assisted the client in formulating a future vision, and (2) the Negative Emotional Attract (NEA), in which the coach assisted the client in addressing current problems and challenges. Forty-eight graduate students participated as coaching clients in the research, which entailed completing two coaching sessions with professional coaches and a series of surveys over the course of one month. Results revealed that compared to NEA-based coaching, individuals reported greater positive affect and a higher quality perception of the coaching relationship in the PEA-based sessions. Additionally, PEA- and NEA-based coaching fostered different motivational orientations to subsequent goal setting, with PEA goals being more promotion-focused and NEA goals more prevention-focused. Participants reported greater willingness to strive toward goals set following the PEA-based coaching session, a pattern that held over time. Despite these psychological differences, physiological differences were not detected between the two sessions. Taken together, the results support the proposition stemming from Intentional Change Theory that coaching relationships characterized by an overall positive emotional tone foster psychological states that optimally support behavior change.

INTRODUCTION

How do coaches help clients make meaningful, lasting change in their lives? This question is fundamental to coaching practice, and is particularly relevant to high-engagement *executive coaching* that involves a holistic, developmental approach to enhancing one's leadership capability (Segers, Vloeberghs, Henderickx, & Inceoglu, 2011). In an effort to structure their work, coaches adopt frameworks and methodologies to guide the coaching process. Due to the rapid growth of practice, many of these frameworks and methodologies lack a strong evidence base of research examining the complex web of cause and effect relationships that impact coaching outcomes (Bennett, 2006; Spence, 2007).

This lack of empirical evidence, coupled with the pressures of a results-oriented culture, often translates to a process of arriving at goals that circumvents deep reflective work necessary for individuals to identify their ideal selves. In fact, Jinks & Dexter (2012) suggest "…that too many practitioners do not spend enough time or use appropriate refinement around facilitating exploration of a broader picture of a client's preferred future before focusing on specific goals" (p. 103). Focused goals without the context of a broader picture can result in short-term behavior modification, but lack the emotional commitment required to sustain one's strivings over an extended period of time. A growing body of research on Intentional Change Theory (ICT; Boyatzis 2001, 2006, 2008) suggests that sustained development is fueled by the psychological energy inherent in a compelling image of one's desired future. By virtue of the questions they ask, coaches can inspire clients to think beyond their current reality and craft their desired future, creating a cascade of motivational resources.

This research summary describes a study that provides evidence for key postulates of ICT by testing the emotional, relational and physiological effects of different types of coaching

conversations and their impact on subsequent goal-related behavior. The summary begins with a brief introduction to Intentional Change Theory and description of the literature related to the main hypotheses. Next, the research design is described, including an explanation of the coaching intervention. Results are reported and discussed. Finally, implications for practice are offered.

Intentional Change Theory

ICT holds that sustained, desired change occurs in a complex process marked by five discoveries: discovery of the *ideal self*, assessment of the *real self* as compared to the ideal self, formulation of a *learning agenda* to move toward the ideal self, *practice and experimentation* with new behaviors, and the support of *resonant relationships*. Discovery of the ideal self entails articulating one's deepest aspirations, hopes, and dreams for the future, as well as aspects of one's core identity such as values. The real self involves examining one's current strengths and weakness in relation to the ideal self. A learning agenda comprised of broad goals and specific actions is devised in order to bring an individual closer to their ideal self. Practice and experimentation is the step by which the learning agenda is implemented and refined. Finally, the entire process revolves around a set of trusting, growth-fostering relationships (Boyatzis, 2008).

Movement through the discoveries of ICT is stimulated by recurrent activation of psycho-physiological states called Positive and Negative Emotional Attractors (PEA, NEA; Howard, 2006; Boyatzis, 2006). Increasing evidence suggests PEA and NEA states are associated with distinct emotional, cognitive, and physiological characteristics that affect behavior at both conscious and unconscious levels (Table 1; Jack, Boyatzis, Khawaja, Passarelli, & Leckie, 2013; Buse, 2011; Khawaja, 2011). Whereas both states contribute to the developmental process, ICT

holds that clients who experience greater PEA relative to NEA are more likely to sustain

meaningful change in their lives.[1]

Table 1. Characteristics of PEA and NEA States

	PEA	NEA
Physiological	Greater parasympathetic influence on autonomic nervous system	Greater sympathetic influence autonomic nervous system
Emotional	Positive emotions: hope, joy, amusement, elation, gratitude	Negative emotions: defensiveness, guilt, shame, fear, anxiety
Cognitive	Enhanced working memory & perceptual openness; Global attention, promotion focus,	Decreased executive functioning; Local attention, prevention focus

Coaching to the PEA and NEA

Often referred to as "coaching with compassion," coaching to the PEA involves

tuning in to the client, emphasizing his or her ideal self, and maintaining an overall positive

emotional tone (Boyatzis, Smith, & Van Oosten, 2009). A coach can activate the PEA through

inquiry designed to evoke hope, mindfulness, compassion, or playfulness as one considers the

question, *who do I want to be?* Questions related to the ideal self encourage the client to reflect

on their deepest aspirations and dreams, people who have had a positive impact on their lives,

and/or their values and core identity (Boyatzis & Akrivou, 2006).

On the other hand, coaching to the NEA is often referred to as "coaching for compliance"

because it involves imposing external standards, pressures or controls on the individual (Higgins,

Roney, Crowe & Hymes, 1994; Howard, 2006). The NEA often arises in the context of an

individual's real self as he or she explores the question *who am I now?* (Taylor, 2006). Although

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[1] This research sets up an artificial separation in order to test research hypotheses about differences between coaching to the PEA and the NEA. Most coaching processes involve both.

the real self includes both strengths and weakness, a well-documented human bias for negative information can render this discovery stressful and threatening for clients (Baumeister, Bratlavsky, Finkenauer, & Vohs, 2001). This is particularly true in situations that involve a perceived lack of control, social evaluation, low efficacy, and/or anticipation of events involving the previous three characteristics (Dickerson & Kemeny, 2004; Sapolsky, 2004; Boyatzis, Smith, & Van Oosten, 2009).

Emotional Experience. As the names suggest, ICT posits that coaching to the PEA and NEA will elicit different affective responses to the extent they are associated with the ideal self and real self, respectively. Both positive and negative emotions play a role in the change process, albeit in very different ways. As Howard (2006) explains, "the ideal self galvanizes change that is authentic, heartfelt, intrinsic; it kindles core passions and motivations that drive us toward our best selves" (p. 658). It fosters positive feeling of hope and efficacy. The NEA, on the other hand, evokes negative feelings of anxiety, guilt, and shame as motivation for changing the real self. Coaching to the real self "galvanizes change that is pragmatic, instrumental, extrinsic; it stimulates adaptive responses that help us to recognize problems, overcome shortfalls, and deal with life challenges" (Howard, 2006, p. 658).

Coaching Relationship. ICT holds that interactions that have an overall tone of the PEA energize and inspire both the client and the coach (Boyatzis, Smith, & Blaize, 2006). Drawing on research in the field of positive emotions, coaching to the PEA should lead to a high quality coaching relationship through greater relationship closeness (Berry, Willingham & Thayer, 2000; Waugh & Fredrickson, 2006), self-disclosure (Cunningham, 1988; Vittengl & Holt, 2000), and relational enjoyment (Berry & Hansen, 1996). On the other hand, coaching to the NEA may reduce relationship quality through feelings of social disconnection. Social disconnection can be

a painful experience for a client, eliciting a defensive response of present self-protection and future threat avoidance (MacDonald, Kingsbury & Shaw, 2005; Eisenberger, 2012). Thus, it was expected predicted that clients would report greater relationship quality with the PEA-coach than the NEA-coach.

Physiological Correlates. Another avenue through which coaching to the PEA and NEA differentially affect clients is unconscious, physiological arousal (Boyatzis, 2008; Boyatzis et al, 2010; Jack et al., 2013). Of particular interest in this study are two branches of the autonomic nervous system (ANS) - the sympathetic nervous system (SNS) and the parasympathetic nervous system (PNS). The SNS and PNS act in tandem to regulate bodily functions, yet support different adaptive strategies in response to environmental demands (Porges, 2003). Extremely sensitive to social information, the PNS and SNS are associated with coaching to the PEA and NEA respectively (Boyatzis, Smith, & Blaize, 2006; Heaphy & Dutton, 2008; Kiecolt-Glaser & Newton, 2001).

The PNS promotes immune system functioning, cardiovascular health, and optimization of the neuroendocrine system (Uchino, Cacioppo, & Kiecolt-Glaser, 1996). The PNS is associated with an enhanced ability to regulate one's emotions (Yuan, McCarthy, Holley, & Levenson, 2010) and recover from the effects of stress (Fredrickson & Levenson, 1998; Fredrickson, Mancuso, Branigan, & Tugade, 2000). According to Porges (2003), the PNS facilitates social communication via neural control of looking, listening, facial gesturing, and vocalizing.

The SNS is typically associated with the human stress response. It is activated by a perceived threat in the environment, which diverts resources away from the bodily core and directs them to the extremities in preparation for action (Levenson, 1992). The SNS suppresses

social communication by limiting facial expression, eye gaze, and head gesture, and creating difficulty interpreting auditory information (Porges, 2003). Prolonged periods of SNS arousal have deleterious effects on health and wellbeing (McEwen, 1998).

PEA, NEA, and Goal-related Behavior

There is evidence to suggest that any form of coaching assists clients in setting and pursing goals beyond what they would accomplish without coaching (Howard, 2009; Grant, Green, & Rynsaardt, 2010; Grant, 2012). These studies suggest that the distinction between PEA- and NEA-based coaching approaches is in the *nature* of the goals clients set and the degree to which these differences affect striving toward one's goals.

One dimension along which the nature of goals vary is self-regulatory focus. Higgins' (1997, 1998) theory of regulatory focus holds individuals manage goal-striving behavior with either a promotion focus or a prevention focus. Those with a promotion focus are motivated to achieve rewards, represent goals as aspirations and accomplishments, utilize approach strategies of goal pursuit, and are concerned with self-fulfillment and growth. Those with a prevention focus are motivated to avoid negative outcomes, represent goals as responsibilities and safety, utilize avoidance strategies of goal pursuit, and are concerned with security and safety (Förster & Higgins, 2005). The difference in these two motivational orientations is relevant to coaching contexts in that a promotion focus has been found to be a more effective strategy for complex and ambiguous tasks, such as developing leadership capabilities (Förster, Higgins, & Bianco, 2003; Sue-Chan, Wood, & Latham, 2012). It was expected that NEA-coaching would elicit a stronger prevention-focus whereas PEA-based coaching would elicit a stronger promotion-focus. Additionally, it was predicted that clients would exhibit greater willingness to strive toward goals set in the PEA condition as compared to the NEA condition.

METHOD

This research utilized an experimental, within subject design in which participants completed two coaching sessions spaced two weeks apart, one in the PEA condition and one in the NEA condition. The coaching sessions were conducted by professional coaches who were experts in ICT-based coaching and trained in the experimental protocol. The coaches and conditions were counterbalanced across participants to minimize primacy effects. All participants met with different coaches for their PEA and NEA session to better isolate the two conditions.

The procedure for each session was as follows: A participant arrived at the lab (a faculty office), provided their consent, and was connected to the physiological monitoring equipment. They then completed electronic surveys and sat quietly while a physiological baseline was recorded. The experimenter then invited the coach into the room for a 30-minute coaching session. At the end of the session, the coach left the room and the participant completed another set of surveys, which included a goal setting exercise. The physiological monitoring equipment was then removed and the participant was compensated. One week after each session, participants received a follow-up survey regarding their goal striving efforts. The two coaching sessions were separated by at least 14 days.

Coaching Intervention

Every participant experienced two conversations – one PEA and one NEA. In the PEA-based coaching conversation, the coach (an assistant researcher) asked a series of questions intended to help the participant formulate a future vision for several aspects of his/her personal life (e.g., "Imagine it is the year 2020 and your life is ideal. What would you be doing?"). This technique was focused on the person and his/her values, hopes, and dreams. The other coach

used an NEA approach to guide the conversation. The NEA was problem-focused and sought to address current stressors that had bearing on the partcipant's future (e.g. "What problems or challenges are you facing at work, school, or home?"). All coaches opened the PEA and NEA session similarly and asked the same anchor question to initiate the session within the first four minutes. A sample of questions in each condition is included in Appendix A.

Five professional coaches served as assistant researchers. In order to minimize differences in coaching competencies and characteristics, coaches were selected based on the following criteria: (1) educational background (master's degree in coaching-related field), (2) ICT training/certification, and (3) field-experience as an external coach. All coaches were Caucasian women between the ages of 55-60 years, an age range consistent with the average age of the majority of coaches reported in a recent international survey (Bennett & Bush, 2014).

The coaches were trained to use a standard protocol for all PEA and NEA coaching sessions (Appendix A), and practiced with volunteers who had the same characteristics as the study sample. During training the coaches observed one another practicing the protocol, received feedback from one another and the volunteers, and raised questions about the protocol. Regular email communication and research team conference calls were used to ensure maximum consistency in the coaching intervention for the duration of the data collection process.

Measures

To the greatest extent possible established measures were used to assess variables of interest, including demographics, affect, relationship quality, and goal striving (Table 2). The Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995) was used to pre-screen potential participants for mental health concerns. Two physiological measures of autonomic functioning were assessed during the coaching intervention: respiratory sinus

arrhythmia (RSA) and skin conductance level (SCL). RSA and SCL are well-established in the

biopsychological literature as indicators of the parasympathetic nervous system and sympathetic

nervous system, respectively (Stern, Ray & Quigley, 2001). Although these data were recorded

continuously, they were processed at points in time standard to all coaching sessions.

Table 2. Overview of Study Design and Measures

Time 1	Intervention	Time 2
Demographics Covariate scales: Self Regulatory Focus (Higgins, et al., 2001) Current Emotional State & Arousal – Self Assessment Manikan[a] (SAM; Bradley & Lang, 1994) Physiological Baseline - RSA, SCL[a]	PEA: *Imagine it is 10 years from now and your life is ideal. What would you be doing?"* NEA: *"What problems or challenges are you facing at work, school, or home? What should be done to ensure your personal or professional success?"*	Physiological Arousal – RSA, SCL Emotion Measures: SAM, PANAS (Watson, Clark, & Tellegen, 1988) Relational Measures: Relational Energy (Owens & Baker, 2011); Interpersonal Closeness (IOS; Aron, Aron & Smollen, 1992); Trust, Rapport Goal Setting Exercise (Twenty Statements Test, Kuhn & McPartland, 1954); Goal Striving (Emmons, 1986) Manipulation Check (adapted from Boyatzis fMRI studies)

[a] T1 measures repeated in alternate coaching condition. All T2 measures were repeated.

RESULTS

No participants were excluded for mental health concerns. The experimental

manipulation check verified that participants perceived the two coaching sessions differently (the

PEA condition was viewed more positively than the NEA condition). In addition, the

manipulation check scores revealed no significant differences between coaches in the NEA

condition and between only two coaches in the PEA condition. Analyses were rerun excluding participants from each of these coaches, and no change in the results was found. Thus, the results reported here are derived from analyses using the full sample.

Sample

The final sample consisted of 48 participants (50% male, 68.8% Caucasian). Their average age was 26.7 years, and all were enrolled as graduate students in non-management degree programs, the majority of which were in the science and engineering fields (62.6%).

Emotional Experience

Differences in client's emotional response to PEA and NEA coaching conditions were assessed in two ways. First, measures of emotional valence and arousal were examined before and after each session. Paired t-tests revealed participants felt happier following the PEA session than before it. There was no significant change in their level of arousal. After the NEA-based session, however, participants reported feeling significantly less happy and more stimulated than they were before the session. Second, post-session PANAS scores were compared between the PEA and NEA conditions. Participants reported significantly more positive affect following the PEA session than the NEA. The reverse was true for negative affect.

Relationship Quality

Participants perceived a higher quality relationship with the coach in the PEA condition than the NEA condition. This held true across all relational measures: trust, rapport, interpersonal closeness, and relational energy.

Autonomic Arousal

No differences in autonomic arousal were found between the two coaching conversations for either measure. RSA, an indicator of parasympathetic nervous system activity, remained

stable from the baseline reading taken prior to coaching through the end of the conversation. Skin conductance level, a measure of sympathetic nervous system activation, increased significantly from baseline when the coaching conversation began and then dropped at the end of the session. This held true in both conditions.

Goal-related Behavior

A qualitative analysis of goal statements revealed thematic differences in the nature of goals set after PEA and NEA-based coaching conversations (Table 3). Goals written after the PEA-based coaching session were significantly more aspirational in nature, suggesting a promotion focus. One the other hand, goals set after the NEA-based session showed significantly more evidence of a prevention focus. They were more proximal, instrumental, prevention-centered, and influenced by external expectations. It is important to note that these differences remained significant even after controlling for participants' trait levels of regulatory focus.

When asked about the goals that were most important to them, participants perceived those set in the PEA to be equally as difficult as those set in the NEA condition. However, participants were willing to exert significantly more effort to pursue goals set after the PEA than the NEA and found more joy in pursuing them. This distinction held true over time, sustaining itself at least one week following each session.

Table 3. Self-regulatory Themes Evident in Goal Statements

Theme	Definition	Goal Statement Example	Condition Most Prevalent
Aspirations	refers to (1) the pursuit of long-held dreams and aspirations, OR (2) desire to have a lasting impact or change on a particular field, career, or on the world at large, OR (3) the desire for mastery or lifelong learning (continual personal or professional growth, entering a profession)	*"I have always wanted to become a professor"* or *"change the way we think about disorders in the psychology field"*	PEA
Proximal & Instrumental	expressed desire for short-term achievement or acquisition of skills that impede another accomplishment; these desires represent a means to an end rather than the desired end-state or outcome	*"Graduate with my Ph.D."*	NEA
Prevention Concerns	participant (1) describes his/her goal as providing a sense of stability or security, OR (2) expresses a desire to avoid an undesirable state or outcome	*"without the funding uncertainty of career in academia"*	NEA
External Expectations	the desire to conform to external social expectations or fulfill an obligation	*"find an internship that is okay with my advisor"*	NEA

DISCUSSION

This study was not intended to create a value-laden dichotomy of the PEA being beneficial and the NEA being detrimental to coaching. Rather, the purpose of this study was to better understand how PEA and NEA interactions impact (1) clients' emotional and physiological functioning during the coaching conversation, (2) the quality of the coaching relationship, and (3) subsequent goal-related behavior, so that the two can be masterfully used in combination. Overall, the results suggest three key psychological differences between coaching to the PEA and coaching to the NEA.

First, coaching to the PEA and NEA have different emotional effects. The PEA was emotionally uplifting and associated with greater positive affect than the NEA. Coaching to the NEA was activating, dampened positive emotions, and was associated with greater negative affect and than the PEA. Second, coaching to the PEA facilitates the development of trust, rapport, and interpersonal closeness in a coaching relationship to a greater degree than the NEA. The coach in the PEA condition was also perceived as being more energizing than the coach in the NEA. Third, coaching to the PEA fosters a promotion-oriented approach to goal pursuit, whereas coaching to the NEA stimulates a prevention-oriented approach to goal pursuit. Additionally, goal striving was greater in the PEA than the NEA. The goal-related findings represent an important contribution in empirically linking self-regulatory focus with positive and negative emotional attractors.

Given the robust differences in the psychological variables in the PEA and NEA, it was surprising that these distinctions did not bare out in the physiological data. There are two possible interpretations for this lack of differentiation. First, it could be that the social demands of interacting with a new person overrode the positive emotional effects predicted to be associated with increased parasympathetic activation (RSA) in the PEA condition. On the other hand, it could be that discussing one's personal vision – especially for the first time – is stress inducing. Thus, sympathetic activation (SCL) was greater in the PEA condition than was expected. Further research is needed to test these interpretations.

In terms of coaching practice, these findings indicate that coaches can evoke PEA and NEA states in clients by the questions they ask, and these states differentially impact elements of one's developmental process. Specifically, this research suggests that interactions that evoke the PEA state, particularly those involving exploration of the ideal

self, help clients to be more open and more motivated to change, and establish a stronger relationship with the coach. Of particular applicability is the finding that clients are more motivated to pursue goals related to their aspirational hopes for the future (ideal self) than goals that address current problems or challenges (a component of the real self). This may come as no surprise, yet clients often set goals without the context of the bigger picture. Helping clients gain clarity on their ideal self will better equip them to set productive goals and sustain effort toward making complex changes in their lives. In summary, these implications call coaches to make the ideal self more central to the coaching process. By using PEA techniques first and frequently, coaches can balance aspects of the coaching process that are unavoidably NEA with something more inspiring.

APPENDIX A

Sample PEA and NEA Coaching Protocol Questions

<u>PEA Questions</u>

1. [ANCHOR] Imagine it is 10 years from now – how old will you be? So imagine you are ___ years old and life is ideal. What might your life and work be like?

2. [FOLLOW-UP] Probe into areas of energy to help them elaborate a holistic vision:

Career
   • If you could do anything and money was no object, what might you be doing as a career?
   • What would most excite you about doing X?
   • Are there other alternatives for your career? What else could you see yourself enjoying?
Family
   • If everything were ideal, how do you picture your family life?
   • How would you describe your family relationships?
   • Will pets be part of your family? (if so, ask more about them….)
Community
   • What type of community will you be living in?
   • Describe your ideal surroundings … region of the world, urban, suburbs, rural, etc?
   • In what activities might you be involved?
Leisure
   • How will you spend free time? When? With whom?
   • What will you find most relaxing and renewing?
   • What hobbies or passtimes will you enjoy?
Spiritual Life
   • Imagine you are feeling spiritually grounded, full and healthy. Describe what that is like.
Physical Health
   • If everything was ideal, what are your hopes for your physical health 10 years from now?
   • What might being physically healthy enable you to do or be?

<u>NEA Questions</u>

1. [ANCHOR] What problems or challenges are you currently facing at school or work?
       - What causes this issue?
       - What *should you* be doing differently to avoid or remedy this issue?

2. [FOLLOW-UP] Probe into current stressors:
   • What fears or concerns do you have regarding your work?
   • Given the current economic environment, what difficulties might you encounter in the job market? What should you be doing to alleviate those difficulties?
   • How are you balancing work and life?
   • How is your academic performance?
   • Tell me about a time that was particularly stressful and how you handled it

REFERENCES

Aron, A., Aron E. N., & Smollan, D. (1992). Inclusion of other in the self scale and the structure

of interpersonal closeness. *Journal of Personality and Social Psychology, 63*, 596-612.

Baumeister, R.F., Bratslavsky, E., Finkenauer, C., & Vohs, K.D. (2001). Bad is stronger than

good. *Review of General Psychology, 5*(4), 323-370.

Bennett, J. (2006). An agenda for coaching-related research: A challenge for researchers.

Consulting Psychology Journal: Practice & Research, 58(4), 240-249.

Bennett, J. & Bush, M.W. (2014). *Coaching for Change.* NY: Routledge.

Berry, D.S. & Hansen, J.S. (1996). Positive affect, negative affect, and social interaction.

Journal of Personality and Social Psychology, 71(4), 796-809.

Berry, D.S., Willingham, J.K. & Thayer, C.A. (2000). Affect and personality as predictors of

conflict and closeness in young adults' friendships. *Journal of Research in Personality,

34*(1), 84-107.

Boyatzis, R.E. (2001). How and why individuals are able to develop emotional intelligence. In C.

Cherniss & D. Goleman (Eds.), *The emotionally intelligent workplace: How to select for,

measure, and improve emotional intelligence in individuals, groups, and organizations*

(pp. 234-253). San Francisco: Jossey-Bass.

Boyatzis, R.E. (2006). An overview of intentional change theory from a complexity perspective.

Journal of Management Development, 25(7), 607-623.

Boyatzis, R. E. (2008). Leadership development from a complexity perspective. *Consulting

Psychology Journal*, 60(4), 298-313.

Boyatzis, R. E., & Akrivou, K. (2006). The ideal self as the driver of intentional change. *Journal

of Management Development, 25(7),* 624-642.

Boyatzis, R.E., Jack, A.I, Khawaja, M., Cesaro, R.L., & Passarelli, A. (2010). Coaching with
Compassion: An fMRI Study of Coaching to the Positive or Negative Emotional
Attractor. Academy of Management Best Paper Proceedings, Montreal, Canada:
Academy of Management.

Boyatzis, R.E., Smith, M.L., & Blaize, N. (2006). Developing sustainable leaders through
coaching and compassion. *Academy of Management Learning & Education, 5*(1), 8-24.

Boyatzis, R.E., Smith, M.L., & Van Oosten, E. (2009). Why coaching doesn't always work:
Coaching with compassion versus coaching for compliance. Working Paper series,
CWRU Department of Organizational Behavior.

Bradley, M.M. & Lang, P.J. (1994). Measuring emotion: The self-assessment manikin and the
semantic differential. *Journal of Behavior Therapy and Experimental Psychiatry, 25*(1),
49-59.

Buse, K. (2011). Why they stay: Individual factors predicting career commitment for women
engineers (May 2, 2011). First International Conference on Engaged Management
Scholarship, 2011. Available at SSRN: http://ssrn.com/abstract=1839842

Cunningham, M.R. (1988). What do you do when you're happy or blue? Mood, expectancies,
and behavioral interest. *Motivation and Emotion, 12*(4), 309-331.

Dickerson, S. S. & Kemeny, M. E. (2004). Acute stressors and cortisol responses: A theoretical
integration and synthesis of laboratory research. *Psychological Bulletin, 130* (3), 355-
391.

Eisenberger, N. I. (2012). The Neural Bases of Social Pain: Evidence for Shared Representations
With Physical Pain. *Psychosomatic Medicine, 74(2),*126-135.

Emmons, R.A. (1986). Personal strivings: An approach to personality and subjective well-being.

Journal of Personality and Social Psychology, 51(5), 1058-1068.

Förster & Higgins, (2005). How global versus local perception fits regulatory focus. *Psychological Science, 16*(9), 631-636.

Förster, J., Higgins, E. T., & Bianco, A. T. (2003). Speed/accuracy decisions in task performance: Built-in trade-off or separate strategic concerns? *Organizational Behavior and Human Decision Processes,* 90, 148-164.

Fredrickson, B. L., & Levenson, R. W. (1998). Positive emotions speed recovery from the cardiovascular sequelae of negative emotions. *Cognition & Emotion, 12,* 191–220.

Fredrickson, B.L., Mancuso, R.A., Branigan, C. & Tugade, M.M. (2000). The undoing effect of positive emotions. *Motivation and Emotion, 24*(4), 237-258.

Grant, A. M. (2012). Making positive change: A randomized study comparing solution-focused vs. problem-focused coaching questions. *Journal of Systemic Therapies, 31*(2), 21-35.

Grant, A.M., Green, L.S., & Rynsaardt, J. (2010). Developmental coaching for high school teachers: Executive coaching goes to school. Consulting Psychology Journal: Practice and Research, 62(3), 151-168.

Heaphy, E.D. & Dutton, J.E. (2008b). Integrating organizations and physiology: Getting started. *Academy of Management Review, 33*(4), 1009-1011.

Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist,* 52,1280–1300.

Higgins, E. T. (1998). Promotion and prevention: Regulatory focus as a motivational principle. *Advances in Experimental Social Psychology,* 30, 1-46.

Higgins, E. T., Friedman, R. S., Harlow, R. E., Idson, L. C., Ayduk, O. N., & Taylor, A. (2001). Achievement orientations from subjective histories of success: Promotion pride versus prevention pride. *European Journal of Social Psychology*, *31*(1), 3-23.

Higgins, E.T., Roney, C.J.R., Crowe, E. and Hymes, C. (1994). Ideal versus ought predilections for approach and avoidance: distinct self-regulatory systems. *Journal of Personality and Social Psychology, 66*(2), 276-86.

Howard, A. (2006). Positive and negative emotional attractors and intentional change. *Journal of Management Development, 25*(7), 657-670.

Jack, A. I., Boyatzis, R. E., Khawaja, M. S., Passarelli, A. M., & Leckie, R. L. (2013b). Visioning in the brain: An fMRI study of inspirational coaching and mentoring. *Social Neuroscience, 8(4),* 369-384.

Jinks, D., & Dexter, J. (2012). What do you really want: An examination of the pursuit of goal setting in coaching. *International Journal of Evidence Based Coaching and Mentoring, 10(2),* 100-110.

Khawaja, M. (2011). The mediating role of positive and negative emotional attractors between psychosocial correlates of doctor-patient relationship and treatment adherence in Type 2 Diabetes. Unpublished Ph.D. dissertation, Case Western Reserve University, Cleveland, OH.

Kiecolt-Glaser, J. K., & Newton, T. L. (2001). Marriage and health: His and hers. *Psychological Bulletin, 127,* 472-503.

Kuhn, M. H., & McPartland, T. S. (1954). An empirical investigation of self-attitudes. *American Sociological Review, 19(1),* 66-76.

Levenson, R.W. (1992). Autonomic nervous system differences among emotions. *Psychological Science, 3*(1), 23-27.

Lovibond, P.F. & Lovibond, S.H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression

and Anxiety Inventories. *Behaviour Research and Therapy, 33*(3), 335-343.

MacDonald, G., Kingsbury, R., & Shaw, S. (2005). Adding insult to injury: Social pain theory and response to social exclusion. . In K. Williams, J. Forgas & W. v. Hippel (Eds.), *The Social Outcast: Ostracism, Social Exclusion, Rejection, and Bullying* (pp. 77-91). NY: Psychology Press.

McEwen, B. S. (1998). Protective and damaging effects of stress mediators. *New England Journal of Medicine, 338,* 171–179.

Owens, B.P. & Baker, W.E. (2011). Relational energy at work: Establishing construct, nomological, and predictive validity. Academy of Management Annual Meeting, San Antonio, TX.

Porges, S.W. (2003). The polyvagal theory: Phylogenetic contributions to social behavior. *Physiology & Behavior, 79,* 503-513.

Sapolsky, R.M. (2004). *Why Zebra's Don't Get Ulcers.* (Third edition). New York: Harper Collins.

Segers, J., Vloeberghs, D., Henderickx, E., & Inceoglu, I. (2011). Structuring and understanding the coaching industry: The coaching cube. *Academy of Management Learning & Education, 10*(2), 204-221.

Stern, R.M., Ray, W.J., & Quigley, K.S. (2001). *Psychophysiological Recording.* (2nd edition). New York: Oxford University Press.

Spence, G.B. (2007). Further development of evidence-based coaching: Lessons from the rise and fall of the human potential movement. *Australian Psychologist, 42*(4), 255-265.

Sue-Chan, C., Wood, R. E., & Latham, G. P. (2012). Effect of a coach's regulatory focus and an individual's implicit person theory on individual performance. *Journal of Management, 38(3),* 809-835.

Taylor, S. N. (2006). Why the real self is fundamental to intentional change. *Journal of Management Development, 25(7),* 643-656.

Uchino, B. N., Cacioppo, J. T., & Kiecolt-Glaser, J. K. (1996). The relationship between social support and physiological processes: A review with emphasis on underlying mechanisms and implications for health. *Psychological Bulletin, 119*, 488-531.

Vittengl, J.R. & Holt, C.S. (2000). Getting acquainted: The relationship of self-disclosure and social attraction to positive affect. *Journal of Social and Personal Relationships, 17*(1), 53-66.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of Positive and Negative Affect: The PANAS Scales. *Journal of Personality and Social Psychology, 54,* 1063-1070.

Waugh, C.E. & Fredrickson, B.L. (2006). Nice to know you: Positive emotions, self-other overlap, and complex understanding in the formation of a new relationship. *Journal of Positive Psychology, 1*(2), 93-106.

Yuan, J.W., McCarthy, M., Holley, S.R., & Levenson, R.W. (2010). Physiological down-regulation and positive emotion in marital interaction. *Emotion, 10*(4), 467-474.