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Linking Insight To Behaviour Change In A Life Coaching Intervention For Women

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Abstract

Solving a problem with insight provokes a change of mind and concomitantly, behaviour. This mixed method study examined moments of insight during life coaching to determine whether having moments of insight led to more meaningful and sustained behavior change.

Moments of insight and non-insight were tracked over nine life-coaching sessions with a population of women (N=6) and their coaches (N=6). Validated measures of problem-solving ability, psychological well-being, and mindfulness were collected before and after the intervention, along with behaviour change goals, Wheel of Life® satisfaction, and a personal strength profile. At eight weeks post intervention, sustainability was assessed via an online survey.

Insights increased significantly ($p<0.05$) during life coaching, 5 times higher than in the previous 6 months. Analysis of qualitative data showed a narrative pattern between moments of insight and goal progress (93%), direct evidence of behavior change in 56%, and direct reference to coaching (33%) in the generation of insight. Mindfulness and ability to solve problems using insight improved, but not significantly. Measures of life satisfaction and personal strength (non-validated) also increased ($p<0.05$). There was no significant difference in well-being scores. Coaches appear to help evoke insight and support the link from insight to behavior change, though more research is needed to ascertain the mechanisms by which this is achieved.

Keywords

Health Promotion/methods, Life Coaching, Behaviour Change, Role of Coach, Problem Solving, Cognitive Science/methods, Creativity, Insight, Compound Remote Associates, Mixed Methods

Abbreviations Used

CALC = Co-Active Life Coaching

CBT = Cognitive Behaviour Therapy

CRA = Compound Remote Associates

EEG = electroencephalogram

fMRI = functional magnetic resonance imaging

QUAL = Qualitative

QUAN = Quantitative

NCRW = Naturally Creative Resourceful and Whole

NIH = National Institutes of Health

MAAS = Mindfulness Attention Awareness Scale

MMR = Mixed Methods Research

PWB = Psychological Well-Being

RAT = Remote Associates Test

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Chapter I: Introduction and Literature Review

Introduction

Aha or eureka moments are described in psychology as solving a problem using insight and can be accompanied by a profound emotional response (Sternberg & Davidson, 1995). While not all moments of insight feature running home naked from the baths like Archimedes was reported to do, they represent tangible cognitive events that provoke a change of mind (Jung-Beeman et al., 2004). This singular provocative moment is an area of interest in the study of behaviour change and in fields such as counseling and life coaching (Rock & Page, 2009).

Until recently, this phenomenon could only be understood in subjective, narrative terms or with lab simulations (Sternberg & Davidson, 1995; Bowden, Jung-Beeman, Fleck, & Kounios, 2005), and much of the occurrence remained a mystery. Was insight a special mental process outside of conscious awareness or a business-as-usual mental process based on past experience (Chein & Weisberg, 2014)? Advances in neuroscience using functional magnetic resonance imaging (fMRI) and electroencephalogram (EEG) have provided objective measures of neural activity during moments of insight (Jung-Beeman et al., 2004; Kounios & Beeman, 2009; Bowden & Jung-Beeman, 2003a). This research generates more precise understanding of what areas of the brain are being activated during different types of problem-solving. However, the extension of this evidence to behavioural outcomes is not yet realized in practices such as counseling and life coaching (Van der Kolk, 2015; Drake, 2008). If sudden insight is truly remarkable and "enables subconscious quantum leaps during the generation of new mental products" (Sternberg &

Davidson, 1995, p.75), it might be predicted that evidence of these moments during life coaching would result in meaningful outcomes in both perspective and behaviour.

Life coaching is a relatively new area of health promotion that engages with an individual or group to help them focus on their potential (Newnham-Kanas, Morrow & Irwin, 2010; Rock & Page, 2009). In the past several decades, life coaching has grown worldwide in sectors such as health, business, and education (Passmore, 2014). In its popularity, many early claims of efficacy were not grounded in evidence but coaching is now supported by over 40 randomized controlled trials (Passmore, 2014). A recent meta-analysis of 18 studies of coaching within organizations showed significant positive correlation in performance, well-being, coping, attitudes, and self-regulation (Theeboom, Beersma, & van Vianen, 2014). In a scoping review of 28 studies of coaching in health behaviour change, researchers found that coaching was a modifier of behaviour in all of the studies reviewed (Liu, Irwin, & Morrow, 2015).

This study evaluated life coaching based on a neuroscientific understanding of insight in a one group, pre-post, mixed method design. The primary aim of the research was to extend the lab-based findings on insight to field-based coaching in a naturalistic setting to determine whether having moments of insight during coaching led to more significant and sustained behaviour changes. Secondary aims included whether insight was being evoked by coaches; whether some people were naturally more inclined toward it; and whether problem-solving ability, psychological well-being, and mindfulness scores improved after a life coaching intervention.

The study followed a naturally occurring life coaching program of 14 weeks duration. As part of the program, six women received nine, one-to-one coaching sessions in support of self-identified goals. All participants in the coaching program were approached to be part of the study

together with their coaches. Consenting participants and their respective coaches independently were tasked to track moments of insight compared to incremental analysis. Incremental analysis can be understood as the linear and deliberate application of logical attempts to solve a problem, whereas a moment of insight is a type of creative and subconscious problem-solving that includes surprise (Subramaniam, Kounios, Parrish, & Jung-Beeman, 2009). As much as possible throughout the document, these types of problem-solving were differentiated as insight and non-insight. The moments of insight and non-insight were captured following each one-to-one coaching session using on-line feedback forms. Participant problem-solving ability was objectively measured pre- and post-intervention by a timed test using compound remote association (CRA) word problems (Kounios & Beeman, 2009). Evaluation of changes in behaviour and perspective by the participant were compared to validated questionnaires of psychological well-being and mindfulness administered at baseline and post intervention. Sustainability of goal achievement, behaviour change, and change in perspective was assessed using a follow-up survey eight weeks after the life coaching program ended.

The setting for the research was a naturally occurring life coaching program called *Women Together*, based in London, Ontario. The program provided subsidized coaching for women who could not otherwise afford it, and followed an established curriculum. All coaches were trained in at least 105 hours of Co-Active Life Coaching (CALC) (Kimsey-House, Kimsey-House, Sandahl, & Whitworth, 2011) and have passed the levels of: foundation, fulfillment, balance, process, and synergy. Coaches were certified by an additional 100 hours of practice under supervision. By transplanting methods from lab to field, the study aimed to contribute to what was currently understood about the impact of coaching and the neuroscience of insight.

This chapter examines the current state of evidence on the nature of insight and insight theory, the neuroscience of insight, extending insight to behaviour, and finally, to models of behaviour change. Literature related to life coaching is presented along with potential underlying theories about how life coaching may support individuals through mindfulness, positive well-being and possibly enabling insight.

Characterizing Insight

Prior to objective measures of brain activity, research on insight had identified some of its basic observable features (Sternberg & Davidson, 1995). Psychological researchers have been interested in insight for over a century and experimental designs began in earnest with animal behaviourists and Gestalt therapy in the 1920s. Puzzles were designed to create an impasse in the problem-solver in order to invoke and characterize the moment of insight and typically only one problem could be presented during a session. Most of what is known about insight comes from these types of lab-based experiments (Sternberg & Davidson, 1995). Another source of understanding has been derived from the first-hand accounts of insight when solving a complex problem from artists, inventors, and scientists. Sternberg and Davidson (1995) collated a thorough review of this research over a 50-year period and summarized the main features of insight:

- While attempting to solve a problem, the participant becomes stuck.
- Suddenly, a solution arrives without the participant knowing how they overcame the obstacle.
- When the solution arrives, the participant is confident that it answer is correct.
- Solving problems with insight is associated with more creative thinking ability.
- Insight problem solving typically involves reorganizing the concept or perceiving

something novel (Sternberg & Davidson, 1995).

Although there does not seem to be consensus on a definition of insight, Schooler (Sternberg & Davidson, 1995) describes insight as an event rather than a way of comprehending because this distinction facilitates the study of the phenomena. Mayer's definition of insight is similarly a transformative event. "A problem-solver suddenly moves from a state of not knowing how to solve a problem to a state of knowing how to solve it" (Sternberg & Davidson, 1995, p. 561).

Insight Theory

In 1926, Wallas proposed four phases of thought processing for insight that included: mental preparation, incubation, illumination, and verification. Siefert wanted to advance Wallas' idea in what was called Opportunistic Assimilation and the Prepared-Mind Perspective (Sternberg & Davidson, 1995). By contrasting both the business-as-usual view and the extraordinary event view, the authors recommended the prepared-mind perspective, even though evidence was scarce and sometimes contradictory. Siefert expanded Wallas' original concept to add sub-phases to the discussion on how insight occurs. In the preparation phase, the individual is confronted with a problem and cannot solve it. A memory of this failure is catalogued prior to giving up. In the incubation phase, the individual may be exposed to new information, which prompts him/her to recall the unsolved problem. Interpretation and assimilation of the new and old data ensues and is followed by insight. Insight is characterized by the aha moment and a restructuring of the problem (Sternberg & Davidson, 1995). Without the ability to objectively measure the phenomena, research on insight by the mid 1990s was at a plateau. "If we could determine exactly what mental processes transpire during them [preparation and incubation phases], before an insightful

outcome emerges, then perhaps we would discover much, if not all, of what there is to know about the nature of insight." (Sternberg & Davidson, 1995, p.76)

Measuring Insight

As studies on insight progressed, researchers looked to improve test reliability by generating multiple results over a shorter period of time (Bowden & Jung-Beeman, 2003a). In order to foster the cognitive activity that is involved in perceiving something novel (ie. insight), Mednick developed a test called the Remote Associates Test (RAT) (Mednick, 1962). In this type of word puzzle, the participant is given three words, two that have a remote association to a third that is a hint for the right answer. The puzzle is to determine the fourth word that associates with the rest. An example problem would be "falling, actor, dust" – and the single correct answer is "star". While "falling star" and "star dust" are remote associates, "actor" is a synonym that provides a hint.

Lab simulations of problem-solving measured by fMRI and EEG have enabled researchers to isolate and further characterize the moment of insight in ways that had not previously been possible (Bowden & Jung-Beeman, 2003b; Jung-Beeman et al., 2004; Subramaniam et al., 2008: Kounios & Beeman, 2009). Jung-Beeman et al. (2004) observed that problem-solving was a cognitive process that could use either sudden insight or non-insight and they wanted to demonstrate the distinctions using neuroscience. For these experiments, insight included the features listed above and was a type of creative, subconscious cognition, while non-insight was more explicitly defined as incremental analysis; a linear application of logic strategies to solve problems (Subramaniam et al., 2008). To examine how insight played out in the brain using fMRI and

EEG, Beeman and colleagues strove to develop lab experiments that could be solved by insight or incremental analysis in order to study what was actually taking place in the brain.

Through testing and adaptation of Mednick's RAT, Beeman and colleagues (Bowden & Jung-Beeman, 2003b, Kounios et al., 2006) found a type of word problem that was relatively quick to solve but could typically only be solved less than half of the time. An example of this type of problem would be: "pine, crab and sauce". The correct answer that completes all of the compound words is "apple". No hint is provided and all three given words must link in front or behind the single correct solution. If the answer came as a series of logical test and retest attempts it was classified as incremental analysis. If the answer came instantly at the beginning or had the characteristics outlined previously, it was characterized as insight. If the puzzle was solved in the time-frame ranging from 2 to 30 seconds depending on the experiment, the participant then indicated verbally whether it was by insight or analysis. These word problems were renamed compound remote association (CRA) problems to distinguish their purpose (Kounios & Beeman, 2009).

By evoking moments of insight, researchers discovered characteristics that both supported what was understood previously and also expanded on it. It turns out that insight does occur consistently on the right side of the brain, or the part of the brain associated with creative thinking (Bowden & Jung-Beeman, 2003a; Kounios & Beeman, 2015). Insight also produces a jolt of electricity; in fact, this insight-jolt is the biggest current the brain is capable of making. This jolt is responsible for the 'aha effect' which can also cause other observable signs such as a look of surprise, widening of the eyes, or sudden body movement. In addition, participants can report when they have deduced something via left-brained cognitive thinking or by right-brained in-

sight; both are verified by the fMRI and EEG technology (Jung-Beeman et al., 2004; Luo & Knoblich, 2007).

In the process of studying insight through brain activity and CRA problems, researchers discovered attendant conditions that enabled or inhibited participants in the insight experiments. Subramaniam et al. (2008) looked at the impact of positive and negative mood on the ability to problem-solve in 79 participants and found that those with a better mood solved more problems in general and also more problems using insight. Specifically, that positive mood can enhance insight by modulating attention and improving sensitivity. Interestingly, neuroscience researchers have found that the second highest current that the brain can create is something called the N400 (Kounios & Beeman, 2015). The N400 is resistance to a concept that the brain considers novel, and that does not fit into the dominant belief system. The more negative a person's outlook, the more likely they are to be triggered by the anomaly. Kounios & Beeman (2015) refer to this resistance as a "mental box" and that the N400 is an alarm bell that signals some construct to which the brain needs to adapt. "These boxes aren't static structures that must be kept or shattered. They are adaptable. A positive mood can inflate the box to make it more expansive and accommodating…a negative mood can shrink the box" (p. 121).

Advancing Insight Theory

Neuroscience has enabled inquiry on the nature of insight that previous research was unable to substantiate. Informed by over a decade of experience in the neuroscience of insight, Kounios and Beeman (2015) have waded into the theoretical debate by restating the phases of insight as: immersion, impasse, diversion, and insight, with a parallel process called incubation that begins at immersion and ends at insight. The phases are balanced between the planes of con-

scious and subconscious awareness, (Figure 2). Immersion includes all of the information gathering and initial attempts to solve from past experience and knowledge. If an impasse is reached, the problem continues in incubation. When the problem-solver engages in other non-related activities, called diversion, these activities occupy the dominant logical brain enough to allow other possibilities to be forwarded (Kounios & Beeman, 2015). This process is modulated in the brain by the anterior cingulate, which the authors liken to a classroom teacher who can choose to answer the eager student with a raised arm, or who can call on the quiet student who may also have a contribution to the class (Kounios & Beeman, 2015). In this analogy, if the quiet student answers the question, the student has considered a sweeping range of new possibilities and results in the classic experience of insight, together with emotional satisfaction, resonance with the "rightness" of the answer, and a restructuring of the problem (Kounios & Beeman, 2015).

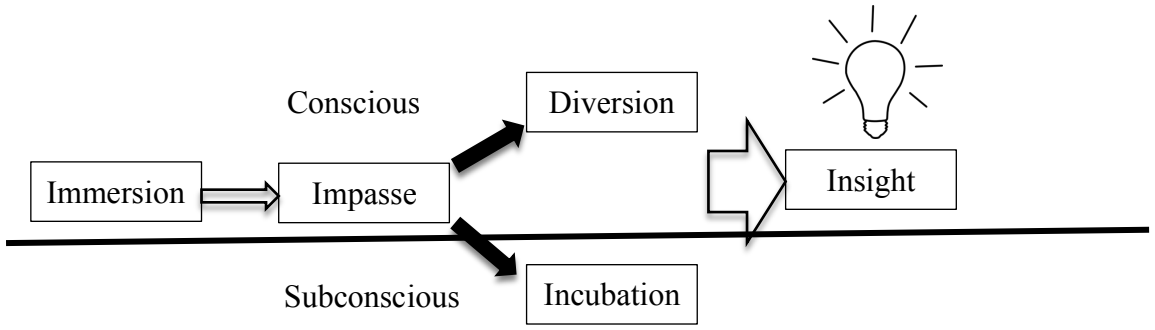

Figure 1. Phases of Insight: immersion, impasse, diversion, insight, accompanied by incubation in the unconscious mind. Adapted from *The Eureka Factor* (Kounios & Beeman, 2015, used with permission).

Perhaps the most significant finding from neuroscience to date is what happens just prior to a problem that is solved using insight. During the lab simulations, people respond to a series of the same type of word problem (as described earlier), and researchers were not surprised that

the person's brain was primed for the next trial (Kounios et al., 2006). What surprised the researchers is that for a person "in an insightful frame of mind" both temporal (right and left) lobes of the brain lit up "like a Christmas tree", even before the problem was presented. "It's the neural manifestation of openness to the full range of possibilities" (Kounios & Beeman, 2015, p.89). This neuroscientifically-informed understanding of what occurs in the brain before and during a moment of sudden insight helps to establish how the left-logical and right-intuitive brains work together to solve problems.

Extending Insight to Behaviour

Through EEG and fMRI technology, neuroscience has offered a new window on the research of insight and yet the lab-based study of insight can only show what is happening in the brain. It does not explain how behaviour is produced subsequently or altered from the insight. Does it matter whether an individual solves life problems using insight or analysis? The relationship between problem-solving and subsequent behaviour can be informed by a spatial understanding of the brain and how it functions.

For a definition of the brain, we adopt Siegel's proposition that the human brain is "a relational and embodied process that regulates the flow of energy and information," (Siegel, 2010, p. 52). It is helpful to picture how the parts of the brain relate to one another with a simple model:

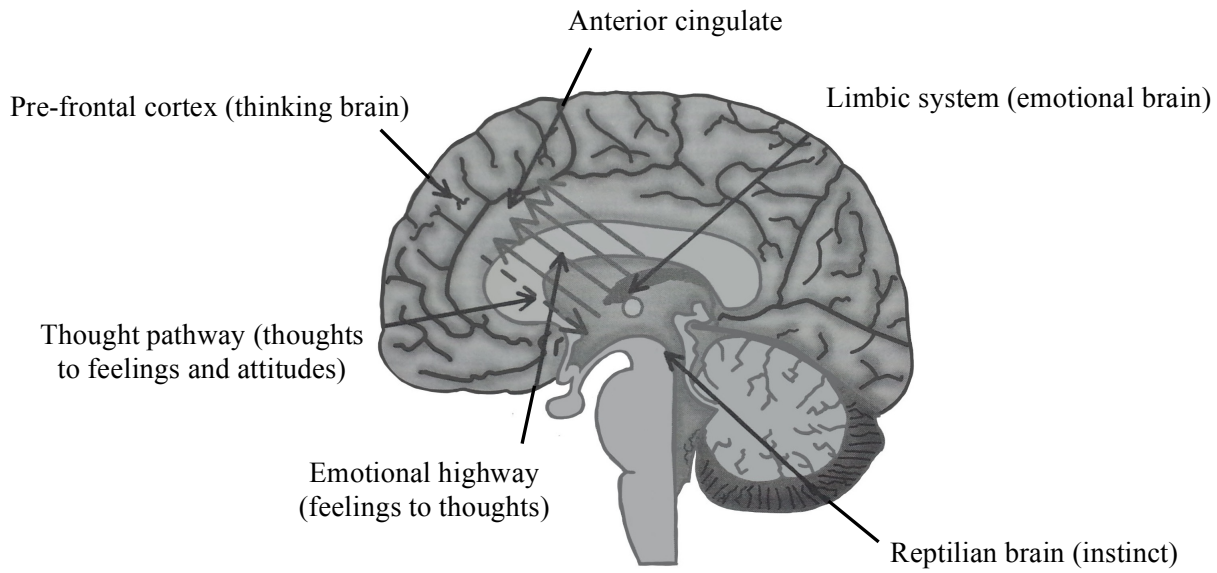

Figure 2. The Triune Brain: Pre-frontal cortex (thinking brain), Limbic system (emotional/mammalian brain) and Brain Stem/Cerebellum (instinct/reptilian brain), from Emotional Intelligence Coaching (Neale, Spencer-Arnell & Wilson, 2009 used with permission)

A simple but effective model of the brain can be created by folding the thumb toward the palm and wrapping the remaining fingers around it. This hand model helps to visualize how evolution has built the higher order thinking brain around the earlier brains. The thumb represents the reptile and mammalian brains and the folded fingers are the higher order pre-frontal cortex (See Figure 2). The system extends through the body via the vagus nerve, along with nerve transmitters and nerve hormones in a complex and continuous network (Siegel, 2010).

As individuals have life experiences, specialized cells in the nervous system called neurons become activated (Van der Kolk, 2015). The long part of the neuron is called the axon and acts like an electric current that has a flow of charged ions in and out of it. This flow promotes emission of chemical neurotransmitters into the space or synapse between the firing neuron and

its receiver or post-synaptic neuron. Under certain conditions such as repetition, arousal, novelty, and focused attention, neural firing can strengthen these synaptic connections. To put it simply, "what fires together wires together" (Van der Kolk, 2015, p. 56).

While people have a genetic predisposition that influences how they interact with the world, experience over time changes the structure of the brain and shapes behaviour (Van der Kolk, 2015). A host of complex interactions take place that include past experience and emotion. Experiences that are negative tend to be avoided or vigorously confronted, and experiences that are perceived as positive or non-threatening tend to be promoted (Siegel, 2010). Note that it is the individual's perception of positive and negative events that precipitates the reaction even when the activity itself ultimately may be causing harm. Siegel (2010) explains how this primal reaction to positive or negative experiences through time can lead to automatic behaviours that are below the level of conscious awareness. Both avoiding and over-reacting to perceived threats can lead to getting stuck in an unconscious pattern of behaviour. In addition, external factors such as job loss, divorce, disease, or loss of a loved one can lead to a sense of impossible choices and impossible problems to solve (Van der Kolk, 2015).

In terms of the organization of the brain, the right side of the brain is the intuitive part and connects to the older brains, the ones we share with mammals and reptiles (Siegel, 2010). Scientists sometimes call these older areas the emotional and instinct brains, respectively. In the case of non-insight thinking, the process is linear and people are typically aware of how they derive an answer from repeated attempts. This type of analysis takes place mostly in the pre-frontal cortex. It is not until problem-solvers appear to "give up" trying to use the left-logical brain that more brain resources become available. In fact, the brain keeps trying to solve the problem and

attempts more remote and more distant connections that involve other brain areas such as the amygdala and hippocampus. The hippocampus is the story-keeper of the brain; it remembers history and experience (Siegel, 2010). The amygdala is the emotional centre of the brain; it anticipates change and perceives threat or pleasure in the classic flight, fight, or freeze response in concert with the brain stem and cerebellum (Schaefer et al., 2002). We also have mirror neurons that are the roots of empathy, mostly unconscious or hard-wired in the mammalian brain. A further influencer in the behaviour chain is the role played by hormones and chemicals that act as messengers and can affect signals along the neural route (Siegel, 2010). Researchers hasten to qualify that brain activity is also enacted in the body through the vagus nerve, a nerve network dispersed in the heart, gut and other major organs forming an important sensory resource that contributes to intuition and meaning (McCraty, Atkinson, Tomasino & Bradley, 2009). These complex networked responses that take place beyond the brain, and which are shared with mammals, are sometimes called the emotional body or simply embodiment (Van der Kolk, 2015).

McMillan (2005) introduces a helpful metaphor when considering the logical thinking brain, largely in the pre-frontal cortex, and the emotional intuitive brain. Drawing from personal experience as a medical student, and decades as a counselor, he describes the tension between patients who struggle between the poles of rigidity and chaos. These dysfunctional behaviours led him to speculate on what he calls the “third position”, that of action. He uses the principle of walking to demonstrate that a toddler learning to walk experiences the rigidity of standing versus the chaos of falling. Walking is the action alternative that is discovered over time (McMillan, 2005). From this basic metaphor of healthy integration, it is possible to imagine a compromised

individual who is stuck in a pattern that is too rigid, too chaotic, or both simultaneously (Greenburg, Partridge, Weiss, & Pisula, 2004).

Suffice to say that behaviour is shaped by many complex interactions including past experience and emotion and that individuals are only conscious of a small portion of this complexity. Considering how much operates beneath the surface of consciousness, it is not surprising that changing a behaviour can be challenging. To link how thoughts extend to behaviour, and particularly the adoption of new behaviours, it is helpful to review models of behaviour change from the field of psychology.

Behaviour Change Models

While many models for behaviour change exist, there are currently three main principles employed to address change using "talk therapy" (Van der Kolk, 2015). I have summarized these behaviour change models as: change the behaviour and to change the mind; change the mind to change the behaviour; and only emotion can change emotion.

Change the behaviour to change the mind. The first group of behaviour change methods was based on animal models, beginning in the 1960s with Skinner et al. called behaviour activation. While this method was overtaken by cognitive therapy in later decades, there has been a resurgence of interest spearheaded by Stephen Hayes using Acceptance and Commitment Therapy (ACT) (Hayes, 2004). The revision of the behaviour activation model refines how behaviour is activated in service of one's values and often in spite of contrary emotions, thoughts, or the difficulty of the activity. Empirical studies and meta-analyses are showing a positive correlation with improved behaviour and demonstrate that a willingness to engage flexibly with behaviour that is in alignment with values can produce results that are independent of a desire to do so

(Forman et al., 2013; Mehrdoost, Neshatdoost, & Abedi, 2013; Hayes, Luoma, Bond, Masuda, & Lillis, 2006).

Change the mind to change the behaviour. The second grouping of methods is cognitive behaviour therapy (CBT). CBT resists definition and continues to be popular for its ability to absorb and include new concepts or areas of focus as attributes. For this reason, proponents have advocated seeing CBT as an umbrella term that continues to build new branches of inquiry such as mindfulness CBT, among others. (Herbert & Forman, 2011). Critics have said that CBT lacks appreciation for emotion and have tried to distance their techniques from it. One of the ways that CBT works is by creating awareness about one's thoughts in relation to behaviour. According to Van der Kolk (2015), the mind cannot change a memory that it is inaccessible. The moment one becomes aware of the story, "the act of telling itself changes the tale. The mind cannot help but make meaning out of what it knows, and the meaning we make of our lives changes how and what we remember," (Van der Kolk, 2015, p. 191).

Only emotion can change emotion. Spinoza said that, "an emotion cannot be removed unless opposed or replaced by a stronger one" (Spinoza, 1982, p. 195) and his statement is embodied in the third principle of talk therapy. Working with emotions therapeutically is proposed to have the effect of using one's own natural brain chemicals to initiate a change in behaviour pattern, an effect McMillan (2005) likened to brain cleansing. Since emotions prioritize events and attention they also inform meaning and relevance. In a qualitative study of insight within a life coaching context, Longhurst (2006) found the role of emotion was balanced with other cognitive and embodied experiences. "Findings reveal that the 'aha'moment is experienced somatically and emotionally as well as cognitively" (Longhurst, 2006, p.1).

Life Coaching

Treatment therapies rooted in psychology were developed to address impaired or maladaptive behaviours (Rock & Page, 2009). All three of the method families described above have been shown to work for various mental disorders or depression, (Villagrá, Fernández, Rodríguez, & González, 2014; McMillan, 2005) but they are not readily available in early prevention, health promotion, or to expand individual and organizational potential (Rock & Page, 2009). Life coaching has been utilized as a popular and practical strategy that can be embedded in wellness strategies, organizations or interventions that manage change (Rock & Page, 2009).

Life coaching is distinct from therapies that address maladaptive behaviours or disordered behaviour, and can be better viewed as a craft (Drake, 2008). Coaching does not look for problems, rather it operates in the area of health and well-being to inform choice and increase potential (Newnham-Kanas, et al., 2010). According to the Coach Federation (2008)

> Coaches are trained to listen, to observe, and to customize their approach to individual client needs. They seek to elicit solutions and strategies from the client; they believe the client is naturally creative and resourceful. The coach's job is to provide support to enhance the skills, resources, and creativity that the client already has. (cited in Rock & Page, 2009 p. 10)

Co-Active Life Coaching

The type of coaching that will be used in this study is called Co-Active Life Coaching (CALC) (Kimsey-House et al., 2011). CALC is a type of life coaching first introduced in 1992. Over 50,000 people have been trained worldwide in CALC to date and CALC was accredited by the International Coaching Federation in 1995 (retrieved from http://www.thecoaches.com/). The

basic structure of CALC is embodied in its name; Co-Active. Coaching co-actively means that the coach forms an alliance with the participant in a dynamic collaboration committed to the client's personal growth (Kimsey-House et al., 2011; Newnham-Kanas et al. 2010; Irwin & Morrow, 2005). Since there are multiple life coaching methodologies based on behaviour and cognitive theory, having access to a group who are coached using the same curriculum with coaches trained using the same methods helps to ensure more cohesive coaching and a more standardized intervention protocol among participants.

Four Cornerstones. There are four cornerstone principles used in CALC. The first principle contends that people are naturally creative, resourceful, and whole (NCRW) (Kimsey-House et al., 2011; Newnham-Kanas, et al., 2010). By holding this belief, CALC refrains from offering advice but rather support the client's own solutions in service of self-directed goals. Coinciding with this principle is the second cornerstone that CALC supports the whole person. This belief enables flexibility in the coaching relationship regardless of the initially stated topic so that meaningful transformation can occur. A third cornerstone is called dancing in the moment (Kimsey-House et al., 2011; Newnham-Kanas et al., 2010). This is a mindful awareness principle that re-directs both coach and client to the value of the present moment in order to cultivate awareness of thought, feeling and body sensation. The final cornerstone is about evoking transformation. Using the client's own topic as a guide, the coach recruits the other three cornerstones interchangeably in order to deepen client awareness, which then leads to an energy shift or transformation that forwards the client's agenda. This is a reference back to the Active part of the co-active strategy. This cycle of action and learning over time can lead to more sustained and effective change (Kimsey-House et al., 2011).

Three Core Principles. The creators of CALC contend that the underlying motivator in all coaching is the client's desire for fulfillment, balance, and/or process, regardless of the coaching topic. In the CALC model, these three principles become core coaching practices and each has a transformative intent (Kimsey-House et al., 2011; Newnham-Kanas et al., 2010).

Fulfillment coaching involves connecting with a participant's values in order to create meaningful goals and reach self-determined potential (Pearson, 2011). Fulfillment includes awareness of one's thoughts and core values. By connecting to core values and resonance, the individual creates goals that are congruent and stronger motivation is developed.

Balance coaching helps the participant explore various viewpoints or perspectives and develop a sense of choice in any situation. It uses geography (body awareness and positioning) along with metaphors and imagination creatively to move the participant from a fixed point of view without attachment. The participant is then free to choose whatever new or current perspective helps them recruit more energy for the goal and get unstuck (Kimsey-House et al., 2011; Newnham-Kanas et al., 2010).

Process coaching follows the idea of emotional primacy in resolution of a problematic or paralyzing emotion. The principle involves being with a positive or negative feeling in order to deepen understanding of the meaning in a person's life and develop more executive functioning around it (Kimsey-House et al., 2011; Newnham-Kanas et al., 2010).

In addition there are features of the Co-Active model that serve to foster flexibility in service of the client's agenda. The coach is trained to draw from a toolbox of these techniques while maintaining a deep and attentive mode of listening to the participant. Beyond active listening, the coach is also reliant on intuition, the client's non-verbal cues, and tone of voice. The role

of the coach is to be supportive, prompt with open-ended questions, explore goals, examine beliefs and/or emotions, develop action plans, and hold the participant accountable to his or her agenda. (Kimsey-House et al., 2011; Pearson, 2011; Irwin & Morrow, 2005)

In studies conducted in health behaviour change using CALC (Irwin & Morrow, 2005; Mantler, Irwin, & Morrow, 2010; Newnham-Kanas et al., 2008; Newnham-Kanas, Gorczynski, Irwin, & Morrow, 2009; van Zandvoort, Irwin, & Morrow, 2008; 2009) researchers have demonstrated the effectiveness of CALC in interventions on obesity, physical activity, and smoking cessation. In a scoping review of Co-active coaching in health behaviour change, 28 studies were reviewed in a variety of intervention settings. Researchers noted that 80% of the participants involved were female, and coaching was supported as a modifier of behaviour in all studies reviewed (Liu et al., 2015). "A majority of the findings expressed a consensus of positive health behaviour trends and the effectiveness of CALC (Co-active Life Coaching) as a tool for helping to ameliorate a variety of health conditions" (Lui, et al., 2015, p. 22). In addition, CALC has been linked successfully to change theories such as Social Cognitive Theory, Theory of Reasoned Action and the Theory of Planned Behaviour (Irwin & Morrow, 2005; Pearson, 2011). Research results from a life coaching intervention compared coaching with positive or negative attractors using fMRI and showed better neural activity came from supportive and compassionate coaching, (Jack, Boyatzis, Khawaja, Passarelli, & Leckie, 2013). A obesity intervention that specifically used CALC compared to a "prescriptive" educational intervention found that CALC compared favourably as a treatment and was similarly effective (Pearson, Irwin, Morrow, & Hall, 2012)

By describing the three core principles of CALC together with the three types of

behaviour change employed in talk therapy that were discussed earlier, the similarities between them may become apparent. It is possible that life coaching, and CALC in particular, is flexible enough to incorporate all of these types of behaviour change.

Based on alignment with one's values, fulfillment coaching could be similar to behaviour activation models that focus on changing behaviour in order to subsequently change the mind. An example of this principle at work would be creating a new habit to replace smoking, along with environmental supports in service of the core value of health. Fulfillment gradually replaces a behaviour through awareness of values together with practice until the unconscious operators around the old habit are replaced. Similar to behavour activation models, (Hayes, 2004), change that is created through fulfillment doesn't necessarily have to feel good or comfortable to be in service of higher order values (Kimsey-House et al., 2011). According to CALC, values are intangible but the behaviours that are produced from a value proposition will be congruent with one's life purpose (Kimsey-House et al., 2011). The coach's role in fulfillment is "to challenge clients to pursue their fulfillment, in spite of the circumstances. Even when clients don't want to go there, your job as a coach is to be out front, pointing the way to a life fully lived, a life that is valued and without regret." (Kimsey-House et al., 2011, p. 128)

Balance may align with CBT in the practice of changing the mind in order to change behaviour. By creating flexibility around a perspective on a topic, balance resolves the mental boxes that tend to hold an individual in a fixed point of view about a topic. Although not explicitly described as such, balance coaching has to find away around the N400 described earlier, the brain's response to novelty that doesn't fit in the dominant paradigm. Just as CBT cultivates awareness of one's story around a topic (Van der Kolk, 2015), balance coaching

actively helps the individual adopt multiple views, even moving around the space to achieve the perception of a new view on a topic. In this way, the individual moves from being stuck in a perspective to considering, and possibly adopting, a new and more helpful possibility (Kimsey-House et al., 2011).

Process is congruent with the belief that only emotions can change emotions. Process works with the emotional body and the present moment to experience the energy pattern of an emotion (Kimsey-House et al., 2011). It could be said that process coaching works with the limbic emotional brain by tuning into what is inconsistent between an individual's words and what is actually lurking under the surface. The role of the coach is to be observant of tone, body geography, and other cues that help the coach to name what is happening in the present moment (Kimsey-House et al., 2011). This helps the client move beyond the logical pre-frontal cortex and into what needs to be resolved in the emotional brain/body. In process coaching, the transformation cannot occur unless the coach enables the client to fully experience the emotion and validates it without judgment. According to CALC, unblocking an emotion naturally has energy in it. Once the individual is not longing resisting the experience of the emotion, he/she recruits new energy around the topic and the blocked emotion is resolved (Kimsey-House et al., 2011).

This is not the first attempt to draw comparisons to other models of behaviour change. Newnham-Kanas et al. (2010) explored comparisons to other models of talk-based behaviour change, including Motivational Interviewing and Egan's Skilled Helper Model. The transformative cycle of each of the types of CALC was evaluated in detail and Newnham-Kanas found many overlaps between the models along with shared core principles (Newnham-Kanas et

al., 2010).

CALC has been shown to be effective during health behaviour interventions and linked to theory, but the mechanics of how CALC produces these outcomes is still under investigation.

Coaching and Mindfulness

One of the approaches that can be used to explore the mechanics of life coaching is related to mindfulness. Mindfulness is a way of paying attention, being present, and self-regulating (Rock & Page, 2009). To be mindful is the ability to direct attention toward the present moment. While this task seems simple, cognitive processes are continuously registering and responding to inputs and defaults. This means humans can spend more of their time and energy mediating worries and problems that are based in the past or anticipated in the future (Neale, Spencer-Arnell & Wilson, 2009). Rock & Page (2009) propose that coaching employs both mindfulness and cognitive change. Coaches are trained to help clients question reactions and differentiate between life narratives that result in accustomed behaviour and their own capacity to re-direct thoughts toward new possibilities (Rock & Page, 2009). The ability for CALC to perform this role stems from the cardinal belief held by coaches that clients are "naturally creative, resourceful and whole" (NCRW) (Kimsey-House et al., 2011 p.3).

Another key aspect of mindfulness is learning to be an impartial witness to ourselves. This includes the ability to see thoughts, emotions, and narrative as elements that are flexible and not fixed. What allows CALC to move clients to learning, action, and hopefully commitment is the ability to "dance in the moment" by following the client's lead with compassion and without attachment to outcome. The client's ability to make choices is held in highest regard (Kimsey-House et al., 2011, p.6). While Rock and Page (2009) draw comparisons to Buddhism and West-

ern philosophy, it is not apparent that coaching practices were intentionally developed with the concept of mindfulness and impartial witness firmly embedded in historical context. As a craft, a coach learns the tools of the trade without necessarily being immersed in its history and development (Drake, 2008).

By examining the claim that mindfulness is part of life coaching, the role of insight may also come to light. While mindfulness is now a familiar part of positive psychology and therapy, the relationship between mindfulness and insight has a rich history in religious practices such as Buddhism but it is not well documented in science. In a recent intervention using CRA problems, meditation was used in comparison to relaxation to see how it influenced the participant's problem-solving ability. The results of the fMRI imaging showed greater activation in areas of the brain typically associated with detecting conflict, representation, problem-solving, and insight activated by the aha feeling (Ding et al., 2015). A naturalistic inquiry done by Klein & Jarosz (2011) noted much of the research on insight was lab-based; they wanted to contribute more field-based observations to the understanding of insight. A sample of 120 incidents were collected for analysis that featured the sudden shift in perception based on the premise that sudden insight requires restructuring problem representations whereas non-insight problems can be solved with continuous logic and no restructuring. The data came from interviews and narratives and was not intended to be a representative sample. The incident coders for features of insight found a strong relation for noticing contradictions (82%) and willingness to explore these contradictions (93%). Insight was triggered by new data in 77% of the cases. Results were split between insights that generated better understanding and those that also created a new action (54% vs 46%). While many of the findings from the field supported the classic understanding of insight,

there were also a few surprises. Aha moments are typically preceded by the perception of being stuck in an impasse, but 75% of the cases examined did not report reaching an impasse. In addition, only 56% of the events were sudden rather than gradual insight, which caused the researchers to question the traditional understanding of insight in that it may be distinct from the aha moment (Klein, & Jarosz, 2011).

In an article interviewing coaches, De Haan (2008) found that awareness of critical moments in the client's progress were found to be associated with "seeing, hearing and feeling that the other person has suddenly arrived at an understanding, so that everything is different from that moment on." (De Haan, 2008, p. 96) The article concludes that doubt is an essential feature of coaching and continuous questioning of self, client, and conditions are key to having the client experience breakthroughs in awareness, (De Haan, 2008).

If engendering mindfulness and insight is indeed part of coaching, it may produce effects similar to those of meditation and lend more proof to Louis Pasteur's saying over a century ago that, "chance favours the prepared mind." (Debré, 2000).

Rationale for Current Study

Given the literature review on the neuroscience of insight and behaviour, it may be proposed that incremental analysis (non-insight) and moments of insight are not competitive processes for problem-solving but that insight is particularly useful when a solution exists outside the range of the problem-solver's current knowledge or awareness. In light of the positive results of coaching interventions, participants may be expected to pursue behaviour change during coaching regardless of whether they explore topics using insight or non-insight. However, it is hypothesized that moments of insight represent breakthroughs in a topic of significance, be ac-

companied by emotion, and result in sustained behaviour change or altered perspective compared to non-insight.

The primary aim of this research was to extend the lab-based findings on insight to field-based coaching to determine whether having insight compared to analysis during coaching leads to more meaningful and sustained changes. Participants and their coaches independently assessed and tracked sudden insight compared to non-insight following each one-to-one coaching session using session feedback forms for a total of nine sessions over a period of 14 weeks. Meaningfulness was measured by rank of topic importance and emotional significance. Participant real-life problem-solving ability was compared to methods used in lab simulations at baseline and post intervention along with validated questionnaires (see below) to measure psychological well-being and mindfulness. Changes in behaviour and perspective were reassessed via survey (see qualitative section below) 8 weeks following the intervention for sustainability. By establishing the participant's proclivity toward insight at baseline, secondary outcomes were to be confirmed: a) whether insight was being evoked by coaches; b) whether some people were naturally more inclined toward it; and c) whether problem-solving ability, psychological well-being, and mindfulness scores improved after a life coaching intervention.

Chapter II: Methodology

The study used a mixed methods approach for data collection and analysis. Mixed Methods Research (MMR) is an emergent methodology and many authors refrain from calling it a paradigm in itself (Tashakkori & Teddlie, 2010). What MMR offers is a unifying philosophy that the primary aim of any research is to answer the research question, and that the theories and lens of research are more important than the paradigm, "What matters most in guiding inquiry decisions are the substantive issues and conceptual theories relevant to the study being conducted, not the philosophical paradigms in and of themselves," (Creswell, 2010, p. 68). Creswell's definition (Creswell, 2015) of MMR was adopted as:

> An approach to research in the social, behavioral, and health sciences in which the investigator gathers both quantitative (closed-ended) and qualitative (open-ended) data, integrates the two, and then draws interpretations based on the combined strengths of both sets of data to understand research problems. (p. 2)

Niglas (2010) proposed that research philosophies be treated as a continuum so that they can co-exist, rather than compete with each other. Instead of the idea of realism opposing relativism, Niglas asserts that a continuum view enables more flexibility in the use of qualitative and quantitative methods when conducting research. Following this logic, the realism/relativism dichotomy would become a continuum that included critical realism, historical realism, and participative, subjective-objective reality (Niglas, 2010). While admittedly more complex, Niglas contends there is increasing support for the continuum view and that this view is a better map of the complexity of research inquiry.

Watkins and Gioia (2015) set out the core features of this methodology. MMR involves the collection, analysis and interpretation of both qualitative and quantitative data (open- and closed-ended) in response to research questions. By way of defining these terms QUAL refers to methods that are narrative, subjective and relative; QUAN refers to measures that are numeric, and objective (Niglas, 2010). Both qualitative and quantitative methods for data reliability should be maintained and the process of integrating these two data types of data should be explicit (Watkins & Gioia, 2015). Research that employs both QUAL and QUAN should use a specific mixed methods design that involves a concurrent or sequential integration and whether QUAL and QUAN carried equal weight or emphasis in the study design (Watkins & Gioia, 2015).

In MMR, the researcher should explain how the QUAL and QUAN data was collected, analyzed, compared and interpreted (Watkins & Gioia, 2015). This process can be convergent parallel, explanatory sequential, embedded, transformative, or multiphase. The names are descriptive of these processes. Convergent parallel means that QUAL and QUAN go through the phases of data collection and analysis at the same time (in parallel). Then the data is merged (converges) for comparison and interpretation. (Watkins & Gioia, 2015). In explanatory sequential, the QUAN data is collected and analyzed first. The QUAL design is then shaped by the QUAN findings in the second phase. In this way the QUAL is used to explain the QUAN. Contrarily in exploratory sequential, the opposite occurs, the QUAL is collected and analyzed first and used to shape the research design for a subsequent QUAN phase. The purpose of this type of design is to develop the QUAL findings into a research design that can be more generalized to a population. In embedded design, there are two data sets and these are embedded within a study to answer different questions. For example, within a study on CALC and obesity, the study may be

designed to validate a new study tool on obesity assessment. Transformative design is underpinned by social justice and is used to study the systemic effect of a marginalized population by challenging assumptions. QUAL and QUAN can be collected and analyzed concurrently or sequentially; the key to this type of MMR is in the adoption of a critical lens. Multiphase design has the purpose of creating multiple studies over time to advance knowledge incrementally, by building upon results of prior studies in an evolutionary way. For the purpose of our MMR study, the convergent parallel design was chosen. Figure 3 shows the relationship between data collection, analysis and interpretation for convergent parallel design:

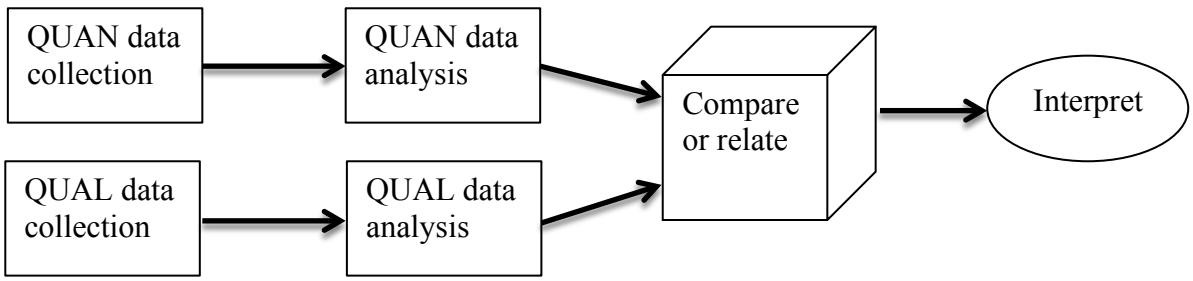

Figure 3. Convergent parallel design from (Watkins & Gioia, 2015, used with permission)

In this study, the QUAN and QUAL were collected and analyzed separately and in parallel sequence. Subsequently, both QUAN and QUAL data converged in comparison and interpretation. To get at the primary aim of the research, that is, whether having sudden insight leads to more sustained behaviour change, it was important to follow-up with the participants' experience. A mixed method follow-up survey was conducted 8 weeks post intervention.

By nature, most QUAL inquiry is inductive, meaning that observations reveal patterns from which hypotheses are generated and theory develops. Since our effort in this study was to translate from lab to field, we adopted a more deductive approach that moved from lab evidence

and theory to hypothesis and then to observations in the field that we hoped to confirm or refute against the lab findings (Niglas, 2010). The purpose of this lab-to-field extension was aimed at positioning the moment of sudden insight within the context of real world problem-solving in order to expose how sudden insight shaped behaviour.

Research Setting and Participants

The research setting was an existing coaching program located in London, Ontario called *Women Together*, established in 2008. *Women Together* offers subsidized coaching to women over the age of 18 who are in financial circumstances that would otherwise prohibit hiring a coach. The program takes place over 14 weeks, twice a year, and includes 9 one-to-one coaching sessions with coaches trained or certified in Co-Active Life Coaching (CALC)[1] *Women Together* was selected for the research study because participants experience a consistent structure, over the same duration, and have access to coaches who have all received similar training in CALC. Since the women independently seek out, apply, and pay a fee to participate in life coaching, this initiative demonstrates a degree of readiness to change. From this naturally occurring program, 11 pairs of participants and their coaches were approached for the study. Data collection took place between Sep-Dec 2015. A final follow-up survey was completed in February 2016 and primary analysis was completed by May 2016.

Recruitment and Informed Consent

Each participant in the *Women Together* program between Sep-Dec 2015 was approached by the researcher to participate in the research study (Appendix A). If the participant indicated interest, informed consent for the study was conducted. The researcher e-mailed the participant

[1] Coaches may also be in certification but must have completed 105 hours of training from Foundations through to Synergy. All coaches in the program at the time of the research were certified professional co-active coaches

the letter of information (Appendix B) and followed-up within one week by e-mail to review and answer any questions (Appendix C). If the participant consented to the study, she confirmed consent by e-mail to the researcher and retained a copy of the LOI for her records. Coaches in the *Women Together* program were also asked to participate in the research if the participant had already consented (Appendix D). Ethics approval for the study was attained through Western University's Office of Research Ethics (Appendix E).

Inclusion and Exclusion Criteria

All participants and their coaches were eligible if they had been accepted to the *Women Together* program for the Fall 2015. Remote participation by phone was permitted and English-speaking women could participate from anywhere in the world. Since data collection took place via internet, participants and coaches who did not have access to a computer and internet were excluded from the study.

Coaching Intervention

The *Women Together* coaching program took place over 14 weeks based on co-active principles and the Wheel of Life®, originally attributed to Paul J. Meyer and often adapted for use in coaching for initial assessment (Byrne, 2005; Kimsey-House et al., 2011; Ross, 2008). At week 1, participants ranked their satisfaction with areas of interest on their wheel from 1=low satisfaction to 10=high satisfaction. Topics included career, money, health, friends and family, romance and significant other, personal growth or spirituality, fun and recreation, and physical environment. Based on self-assessment, participants were coached to make SMART goals in the area(s) that they wish to focus. These were goals characterized as: specific, measurable, achievable, realistic, and timely (SMART). During weeks 2,4,5,6,8,9,10,12, and13, participants engaged

in 9 individual coaching sessions delivered in person or by phone by a qualified coach. Coaches were recruited by *Women Together* and had to be trained in CALC and to qualify as coaches in the program. However, during the research study, all participating coaches were Certified Professional Co-Active Coaches (CPCC). Coaches could coach more than one participant during a session but typically not more than two participants. The program had two personal, non-scheduled, coaching weeks at week 3 and 11 to allow for potential integration of changes. These personal weeks allowed time to relax and also allow catch-up for any missed or cancelled coaching sessions. Individual coaching sessions were one hour and explored the Wheel of Life® topics in more detail. Although there was an explicit curriculum, the coach was flexible about topics depending on the participant's interests, and this practice is consistent with CALC philosophy (Kimsey-House et al., 2011). In addition to week 1, there were optional group activities at midpoint and end of program intended to promote health and well-being such as yoga, meditation, or potluck.

Measures

Upon study enrolment, the participant's demographic information was collected including age range, education level, reasons for seeking coaching, and initial goals. Any prior experience with coaching or counselling in the last 5 years (as a Yes/No) and duration was noted because, as Baer found (2008), prior experience could be a confounding variable (Appendix F). SMART goals derived from the program's Wheel of Life® exercise were also collected (Appendix G). Problem-solving ability was assessed at baseline and post intervention using compound remote association (CRA) problems and the rate of successes employing cognitive or sudden insight were measured by self-report after each trial out of 20 word problems (Appendix H). CRA

Testing was carried out using Powerpoint slides and a pdf version (Adobe Acrobat Reader) was be e-mailed to the participant just prior to remote testing. Since it was a timed test (30 seconds x 20 questions) and answers could be found on the internet, the test was moderated over the phone by the researcher.

Questionnaires were used to scale Psychological Well-Being (Appendix I) and Mindfulness (Appendix J) at baseline and post intervention (+/- 1 week). Following each one-to-one coaching session (a total of 9 sessions), coach and participant independently completed a brief Session Feedback Form (Appendix K) created to track types of problem-solving if any were experienced during the coaching (sudden insight or analysis). Since coaches were not required to maintain specific program order for coaching sessions in order to be open to the participant's agenda, coaches were asked to complete a curriculum topic checklist to compare actual topic coverage against the proposed curriculum (Appendix L). At eight weeks after the program ended (+/- 1 week), participants completed a Follow-up Survey (Appendix M) to evaluate the impact of coaching and whether changes enacted during coaching were sustained. All surveys, questionnaires and feedback forms were administered using the on-line survey provider Survey Monkey® (https://www.surveymonkey.com/). The researcher monitored survey completion and sent e-mail prompts (+/- 1 week), after which the data point was considered missed.

Compound Remote Association (CRA) Problems

CRA problems were developed and normed by researchers at Northwestern University in Illinois. They were originally adapted from the Remote Associates Test (RAT) created by Mednick to measure creativity (Mednick, 1962). Through repeated trials, word problems were found to engage the same critical functions and phenomenological experience as insight and complex

problem-solving. The advantage of using CRA problems over classic insight problems in psychology research is that they are relatively simple and can be solved in a short time, which enables multiple attempts in an experimental session. Responses are also easy to score as there is only one solution for each problem. Based on results produced over a series of trials, the CRA problems have been ranked for difficulty and the normative data can now be used by other researchers (Bowden & Jung-Beeman, 2003b).

To administer the CRAs, participants saw three words that are associated with fourth word, which remains a mystery. They were asked to generate the missing word that linked with each of the words presented and resulted in three common compound words. Participants were given practice problems prior to the scored experiment and a common definition of sudden insight compared to analysis was given. Time given to solve can vary between 2 -30 seconds. In our study, we mirrored the experiments used to examine insight with time intervals of 30 seconds duration. Participants viewed the problems on a slide presentation, 24 pt black text in Times New Roman on white background that advanceed every 30 seconds. Words were shown horizontally at, above, or below centre field of vision. Like the fMRI experiments on insight, a line comparison task was given as a cognitive rest between puzzles (Bowden & Jung-Beeman, 2003b).

In the line comparison task, participants saw two sets of lines (eg / / \ and / \ /). The task is to answer "yes" if both sets had the same number of left-leaning and right-leaning lines or "no" if the sets had a different number of left-leaning and right leaning lines. In this example, the answer is "yes".

After each success, the time was recorded in seconds and the participant was asked how they solved the problem by giving one of the following responses: (1) somewhat insight, (2) in-

sight, (3) somewhat analysis, (4) analysis. Correct responses and times were tallied for each participant, and number of problems solved using insight was noted (Appendix H).

Mindful Attention Awareness Scale (MAAS)

Mindfulness-based interventions have grown in number and have necessitated the development of tools to measure related constructs. Seeing this need, Brown and Ryan (2003) set out to develop and test a psychometrically sound way to measure mindfulness. By understanding what traits of mindfulness are being engaged in interventions is helpful to demonstrate adaptations over time. The traits were developed into a 15-item questionnaire called the Mindful Attention Awareness Scale (MAAS). Brown and Ryan (2003) found that the traits were positively related to adaptive characteristics such as openness to experience and emotional intelligence. Since mindfulness has become increasingly understood in coaching and cognitive psychology as a process or state that is distinct from meditation, administration of the MAAS may help to determine if coaching evokes these traits in a way similar to mindfulness meditation training. In fact, in the validation of another tool for mindfulness, the Five Facet Mindfulness Questionnaire, Baer specifically contraindicated involvement in counselling such as Acceptance and Commitment Therapy (ACT). As Baer states "Although CBT and ACT do not require a regular meditation practice, mindfulness-related concepts and exercises are central to these interventions. Whether the effects of working with these are similar to the effects of regular meditation practice is unknown." (Baer, 2008, p.332) We expected that mindfulness facets would indicate a positive relationship between coaching intervention and psychological well being. Degree of agreement to the statements in the Likert scale was recorded and the MAAS was scored by tallying these

responses.

Psychological Well-Being (PWB)

Increasing research in the area of positive psychology and how it relates to health has prompted the development of tools to assess well-being (Salsman et al., 2014). The construct of psychological well-being was examined as the ability to cope with life, have resilience, and experience life satisfaction. As part of the National Institutes of Health (NIH) standardized toolbox, the Psychological Well-Being Scale was developed to assess this construct in adults (Salsman et al., 2014). Salsman et al. (2014) created a pool of statements based on literature review and expert opinion to test positive affect, life satisfaction, meaning and purpose. These items were tested in a sample of 552 adults by internet response and researchers found a strong relation between construct and scoring (reliability ≥ 90) (Salsman et al., 2014). For the purpose of this study, the 33 item scale related to positive affect was used. The PWB was also a Likert scale and was scored by tallying degree of agreement to statements in the scale. Scoring for this scale was completed by NIH in accordance with usage agreements (See Appendix N).

Data Analysis

The methodology of the research was designed to detect whether a person experienced problem-solving using insight or analysis, whether problem-solving was accompanied by an emotion, how strongly that emotion is experienced, and how important the problem-solving subject was to the participant. The study was a one group pre-post mixed method design. Descriptive statistics were used to characterize baseline demographics. Paired t-tests of means were used to detect changes over time in the post session questionnaires, MAAS, PWB and CRA. This type of test was selected because it can work for smaller sample sizes that may not be evenly distrib-

uted (Moore, Notz & Fligner, 2013) Logistical regression was used to analyze the relationship between insight, strength of emotion, and topic importance.

Qualitative data in the form of free text responses in participant and coach surveys was assessed via deductive coding (Mills & Birks, 2014), related to established characteristics of insight that included impasse, insight, emotion, and change in perspective. Since the primary aim was sustainability of behaviour change in relation to insight, the focus of the qualitative analysis was on the goals that had been sustained at 8 weeks follow-up. Progress descriptions that did not meet all the criteria of insight but also yielded goal achievement were characterized as non-insight.

For the coaches' survey, techniques related to mindfulness and positive affect were assessed by a checklist adapted from a coaching evaluation tools used by the International Coaching Federation (ICF) called the Coaching Process Inventory Bachkirova, Sibley & Myers, 2013).

Chapter III: Results

Data collection took place from September, 2015 to March, 2016. A total of 11 *Women Together* participants were approached for the study and eight consented, along with their coaches. There were two participants lost to follow-up during the 14-week program, resulting in a cohort of six participants and six coaches that completed study requirements. If a participant dropped out, her coach also withdrew in conformance with the ethical guidelines for this study.

Results of each assessment are described below. The primary aim of the research was to track moments of insight compared to non-insight in relation to sustained behaviour change. Due to the interest in sustainability, qualitative analysis focused on goals that participants had sustained at eight weeks follow-up. These achieved goals were traced back to the session feedback forms to evaluate the participant's progress. Reports of insights were assessed against established characteristics that included: reaching an impasse, having a moment of insight followed by strong emotion, and resulting in a change in perspective. Progress descriptions for achieved goals that did not meet the criteria of insight were categorized as non-insight.

Secondary aims were to evaluate whether coaches were evoking insight; if some people were naturally more insightful; and if problem-solving ability, psychological well-being, and mindfulness scores improved after the life coaching intervention.

Descriptive statistics were run on all quantitative measures using SPSS (IBM, version 23) with an alpha of 0.05. Paired *t*-tests of means were used for CRA, MAAS, PWB, and logistic regression analysis was used to assess the relationship between insight, topic importance and emotional rank. A Fisher's Exact test was employed due to small sample size. In addition, results of

the Wheel of Life®, commonly used in life-coaching, and the *Women Together* Personal Strength Profile were also reported.

Demographics and History

Demographic information included age, education level, reasons for seeking coaching, and initial goals. Prior experience with coaching and moments of insight in the previous six months were also ascertained.

All eight consented participants were in the age range of 30-49 years. In level of education attained, three participants graduated high school, two listed college, two had university degrees, and one reached the postgraduate level. For both individuals who exited the program, education level attained was highschool. Reasons given for seeking life coaching included: increase self-confidence (n=2), learn tools (n=2), gain perspective (n=2), create balance (n=1), new career (n=1), self awareness (n=1), curiousity (n=1), general support (n=1).

In response to coaching or counseling in the past five years, five participants had no experience. Of the three participants who did have coaching or counseling experience, the duration ranged between 2-6 months over the past five years. In both withdrawals, there had been no prior experience with coaching or counselling.

To establish a baseline for frequency of insights prior to coaching, participants were asked if they had experienced any moments of insight in the six months prior to the start of *Women Together*. Out of eight participants, seven indicated that they had experienced insight in the last six months and described the insight. Five of these responses were insufficiently described to evaluate against the criteria for insight. Regardless of the ability to qualify the insights prior to intervention, all reported moments of insight (n=5) by the six participants who completed were ac-

cepted as baseline data. Going forward, the results section will only pertain to the six participants who completed the study.

Goal Setting and Attainment

To evaluate sustained behaviour change, participants were asked to review any new perspectives or behaviours gained after coaching against goals they had established at the outset. Goal-setting was the focus of the first two sessions of the *Women Together* program and was carried out in two parts. The first phase in Week One was mapping life satisfaction to a goal-setting tool called The Wheel of Life®**,** commonly used in life coaching. This exercise was completed at orientation for all participants. The second phase was at the first meeting with their coach, during which participants developed specific, measurable, achievable, relevant/resonant and time-delineated (SMART) goals in order of priority. The criteria for the SMART goals: specific, measurable, achievable, relevant/resonant and time-delineated, were intended to ensure goals were specific and measurable enough to be evaluated as having been attained in a timeframe and that the goals were meaningful to the goal-setter (Ross, 2008). Table 1 maps the priority goals against the initial goals given by participants prior to the start of the program. Each participant was invited to identify three priority goals. Among 6 participants, a total of 13 goals were stated. However, none of the goals met the criteria for a SMART goal.

Table 1

Initial and Prioritized Self-Stated Goals for Life Coaching Participants

Participant	Initial Goal	Prioritized Goals (Quoted)
1.	Be more confident in myself	1. Personal development 2. Health/fitness 3. Fun/recreation
2.	Weight loss, making more money in business	1. Career and family balance
3.	Increase resilience	1. Healing myself - from inside out - to build resilience/confidence/ and remember to love self 2. To put myself first and focus on my health - my mental health as well as my physical health 3. Focusing on what I'm good at - and ensuring that I'm aligned with what I'm doing every day for a career - so I'm not depleted but rather filled up and energized.
4.	To be more aware of a career focus and feel more confident in myself	1. Finding a career that I enjoy 2. To get out and be around more people 3. To be healthy
5.	Creating balance	1. To attract a partner to build a meaningful relationship 2. Quit smoking 3. Get control of finances
6.	I do not resonate with this question or just goal setting in general	*No priority goals established*

All participants reported working on their priorities during sessions. Participants typically reported that some goals were still a work-in-progress. This is likely due to the nature of the goals established. For example, one person's priority goal was stated as "attracting a partner to build a meaningful relationship." As stated, this goal was not specific, measurable or reasonable to predict in a delineated time. This individual did not achieve her priority goal within the coaching program. Her secondary and tertiary goals (quit smoking and get control of finances) were achieved.

In another example, the participant's priority goal was to find a career she enjoyed. While she reported that she was still looking for more meaningful work by the end of the coaching program, the work that she was doing had become more manageable and she was experiencing a high degree of success. This same individual achieved her secondary goal (to get out more and be around people) and made progress on her tertiary goal (to be healthy).

In a final example related to goals, a participant initially resisted the exercise to create goals. During the final round of data collection, the participant was asked if she would feel comfortable reporting on goals. She responded that she no longer avoided making goals and that she had made progress on things that had concerned her.

Moments of Insight During Coaching

Session feedback forms were requested from participants and coaches following each one-to-one coaching. A weekly reminder was sent to each coach and participant by e-mail with a link to the on-line form. On average, participants completed five forms out of nine, resulting in 28 forms completed from six individuals. Individual responses ranged from 2/9 to 9/9. Twenty

feedback forms completed by coaches and nine of sessions dates matched. After accounting for the overlap, participants and coaches reported on (39/54) 72% of the coaching sessions.

Qualitative data collection was used to probe concepts that were not sufficiently captured by quantitative methods alone. If participants or coaches reported an experience of insight during a session and checked off which characteristics of insight were present, they were then asked to describe the moment of sudden insight in their own words. Every participant reported at least one instance of sudden insight (range from 1-9) during the coaching intervention, with an average increase of 5.4 moments of insight. In the sessions where coaches and participants reported on the same session (n=9), moments of insight and non-insight, either observed or experienced, were reported consistently.

Participants checked at least one of the characteristics of insight (ranging from 1-4) for each report of insight. Using a paired sample *t*-test ($p < 0.05$), all participants experienced more moments of insight during coaching (n=27) and more than a 5-fold increase over baseline (n=5) as described in Table 2.

Table 2

Frequency of Insights Before and During Coaching (N=6)

Time Period	Insights Reported	Mean	SD	P Value
Prior 6 months	5	0.83	0.41	
During coaching	27	4.50	3.08	<0.05

Linking Insight to Behaviour

This study examined the relationship between the experience of insight and the behaviour that was subsequently produced or altered by the insight. As Van der Kolk (2015) stated, conditions such as repetition, arousal, novelty, and focused attention cause neural firing that can strengthen the synaptic connections. Moments of insight that occurred during coaching were reviewed for cohesion with the defined characteristics of insight and subsequently, for the participant's report of whether these insights resulted in a change in behaviour at eight weeks following the coaching program. A representative selection of insight reports and behaviour change is shown as quoted responses in Table 3. The mapping of narrative responses to characteristics of insight and subsequent behaviour change revealed a pattern between the shift in perspective and the resulting new behaviour. In the presence of insight, participants experienced characteristic emotional charge and a change in perspective. It was also evident from the responses that a new behaviour was produced.

Table 3

Goals and Related Insights Mapped to Insight Characteristics and Behaviour Change

Goal	Impasse	Moment of Insight	Emotion/ Important Topic	Change in Perspective	Change in Behaviour
Career Enjoyment	My career was the big thing because I was having a real problem where I am working right now. I was definitely stuck in the poor me and what am I going to do?	It was an eye opener. What happens if I lose my job, is that the end of the world or is it a good opportunity to move on and do something else?	I was freaking out.	I think it was about changing how you look at things, is the glass half empty or half full?	And right now for the first time in a year, I'm over a hundred percent in sales. I'm not really sure what's working but whatever it is I am doing it.
Building Resilience	It was good because I was struggling with it for a really long time.	I do feel like I was able to have an aha.	It was scary and sort of terrifying and then also it was liberating.	I started to realize that I was separate from them (ugly voices) and I was able to acknowledge when certain ones spoke that that wasn't necessarily me	… feels much more manageable. It gave me the foundation I was looking for to feel a little more grounded and to take the steps that I was thinking about taking anyways.
Putting Myself First	I felt stuck in a perspective and viewing myself from another lens.	As I started to explore different perspectives I quickly realized the different energy that was associated with each perspective.	It was overwhelming - these different emotions -	But I was able to pivot away from the 'their perspective' to move onward and explore my new perspective.	It's something I remind myself daily - to ensure that I am looking at myself through this lens.
Personal Development	With my upbringing, I never felt that I'm smart enough or capable	I think it's more like the insight that I realized –ahhh that is what	It's like grieving too, like why did I wait so long.	All these times that I struggle with people, with my life, with myself,	With this I feel that I am slowly able to do it and trust myself and try

enough to follow through with my dream.	happens.	like how I carry myself, was because of what happened, not just one thing but what happened.	things out and moving forward

We anticipated that qualitative data would support the characteristic representation of impasse followed by insight and strong emotion leading to a change in perspective and this was true for all (n=27) of the insights reported. Of these insights, 33% were specifically described as stemming from a coaching technique (n=9). Examples of this direct evocation of insight from coaching are shown by participant quotes in Table 4.

While moments of insight could be directly linked to goal progress for 93% (n=25) and behaviour change in 56% of the cases (n=15), not all moments of insight could be attributed to sustained behaviour change.

Table 4

Insights Evoked by Coaches and Coaching Practice

Goal	Impasse	Insight Evoked	Emotion Topic Importance	Change in Awareness	Change in Behaviour
Quit Smoking	(In the past) I would have a puff of smoke and feel really guilty and think I screwed up. I might just as well become a smoker again.	(My coach)* said you put so much pressure on yourself like – who has the rules of the quitting book - is the way she put it	So I made the (quit) date my mom's birthday, so I felt accountable for it	I think it really got in my head if I slip up it doesn't mean that I've failed completely	A big one was to quit smoking and I have to say I have been successful with that
Putting Myself First	(My coach) guided me in connecting with my inner leader	The moment that I realized that I have an inner leader and that I'm not alone.	It was a moment of comfort and confidence	I started to feel a strength that has been missing for a while	(unspecified)
Work Alignment	(My coach) coached me in digging deeper and always bringing it back to the person I am and want to be	I had a moment of sudden insight when we started to describe the values as a '10' vs where I was in them right now	Fairly emotional	It made me realize that I can take steps to get to that '10' and that they will fluctuate	I am getting a bit better just having the boundaries… and saying no to the things that I don't want to do
Love Myself	(My coach) played a large role and kept me accountable for my actions.	The thing that amazed me was the shift in energy and belief when I talked about myself in the third person vs. the first	It was a lot harder to talk about myself in the first person	It was a good exercise in starting to come from a place of strength and positivity and build out on my best version.	(unspecified)
Quit Smoking	It's kind of like the smoking thing that negative talk I found that session really difficult.	(My coach) wanted me to draw a picture of a really mean looking monster and stomp on it	So I was laughing through that because it seemed kind of silly	But she was putting a literal point on it.	And I found that helpful to have a picture of the gremlin that takes over sometimes.

*****where pronoun or coach's name was stated, it has been changed to "my coach"

Non-insights

Fewer non-insight sessions were reported (n=12) during the program. Of these non-insight sessions participants described working through emotions or events that were not attributable to insight but nevertheless supported their goals. We found three examples of behaviours that were described in the context of non-insight. Since the characteristics for non-insight problem-solving differ from insight, the categories were collapsed into a "non-insight response" in the following examples of non-sight linked to behaviour as quoted responses in Table 5.

Table 5

Non-Insights and Subsequent Behaviours

Goal	Problem	Non-insight Response	Behaviour
Meaningful Relationship	I would date someone and it just wouldn't work out and I didn't really understand why. So I took a step back so I wasn't working on it for awhile	Girlfriend and I met a couple and kind of adopted them as our vacation mom and dad. The lady was very maternal as well. I think I gravitate towards that. And she introduced me to her son. I wasn't even looking for it.	I'm spending time with (her son) this weekend so it should be interesting.
Work and Family Balance	I had a real struggle with my first son when he was born and the first year of his life.	Having a child really can make people vulnerable, It cracks your heart open.	Today I wrote the blog about the why for the business.
Career Enjoyment	I was having a really tough time with it.	My manager changed. So that was a huge thing too.	That eased things off a bit, but it was still that I just had a couple more months.

Relationship between Insight, Topic Importance, and Emotion

Based on the characteristics of insight, we hypothesized that topic importance and strong emotion would be present together at the moment of insight. The feedback form was structured to detect presence or absence of a moment of sudden insight but in either case, to track topic importance and emotion using a 10-point Likert scale. We proposed a logistic regression analysis for topic importance, presence of strong emotion and insight or non-insight to assess this relationship.

Given the small sample, we conducted a Fisher's Exact test and found a significant result ($p<0.05$) for the presence of emotion in cases of insight among participants (11.67) as in table 6, but this result was not mirrored in the coaches' reports. Coaches were more likely to report high topic importance and emotion in the absence of insight. Although emotion was consistently reported for all moments of insight that occurred during coaching, logistic regression analysis for participants and coaches did not reveal significant results for either importance or emotional rank between insight and non-sight.

Table 6

Presence of Emotion During Insight Among Participants

		Non-insight	Insight	Total
Emotion	Yes	4	20	24
	No	4	0	4
Total	Count	8	20	28
	% within emotion	28.6%	71.4%	100.0%
	% within insight	100.0%	100.0%	100.0%

Participants reported on 28 sessions, out of a possible 54. In the sessions reported, 20 sessions included the presence of one or more emotions, 15 labeled the topic very important, four were fairly important. Of those session topics labeled very important, only four participant sessions indicated there was no emotion experienced during the session. Participants reported 20 sessions during which they experienced moments of insight, including three sessions where insight was gained between sessions, and the remaining eight sessions reported no insight. Presence of emotion was concurrent with all moments of insight ranged from sadness to joy.

Coaching Feedback for Reliability, Curriculum Adherence and Type of Coaching

Coaches were asked to complete feedback forms after each session. A total of 20 forms were completed including 11 sessions where participants had not filed a report and nine that date-matched. Of the coach feedback that could be matched to participant feedback, the session summaries were consistent and there was agreement on sessions that included a moment of sudden insight. When the coach and participant feedback forms were pieced sequentially, all participants had over 50% (5/9) of their individual sessions reported and 72% of total sessions were reported. Sessions took place by phone or Skype™ with the exception of one client who had at least half of her sessions (5/9) in-person.

In the feedback from, coaches were asked to summarize: the session, presence of emotions, topic significance and which CALC methods were employed during the session. Coaching practices included items such as: asked open-ended questions, explored client beliefs and followed up on previous homework. A complete list of questions can be found in Appendix K. All coaches reported using at least three of the practices during individual sessions. Practices varied from session to session and among coaches. Types of coaching ranged across fulfillment (9),

process (9) and balance (2), based on feedback from the coaches. Participants frequently referenced their coaches or the coaching program and provided specific examples of how CALC was supporting them.

The Coaching curriculum checklist (Appendix L) was completed by three out of six coaches. All participants received nine coaching one-to-one coaching sessions. From the nine topic themes outlined in the curriculum, two coaches said that they covered all of the topic areas and one coach reported that seven out of nine topic areas were covered.

Compound Remote Association Problems (CRA)

Normed and validated CRA problems were used to assess whether ability to solve problems using insight increased over the course of the *Women Together* coaching program. Participants were tested in the first week of the intervention, according to the methods described in Chapter 1. The test was administered by phone and participants received the question set by e-mail at the beginning of the call so there was no chance to pre-study the problems. Since there was some evidence (Wieth & Zacks, 2011) that time of day could impact an individual's problem-solving ability, each test time was noted and post-tests were conducted at the same time of day for each participant.

Test questions were selected in a ratio of difficult-to-easy questions based on the normative data (Bowden & Beeman, 2003b), with an easy question placed at the beginning of each set of 20 questions and a different question set used during the post-test. Three words were presented and the participant was prompted to think of a fourth word that would compound with each of the three to make a commonly known word. For example, pine/crab/sauce all go together with apple to make pineapple/crab apple/apple sauce. The full test sets are provided in Appendix H.

In each test, the participant followed the question on the screen (displayed using power-point, black ink on white, 24 point font, in the same manner described in Bowden and Beeman (2003b). Thirty seconds were allowed for each problem and time to solve was noted in seconds for each solution. The tester remained silent until the last 5 seconds of the test, whereupon a guess was prompted. This prompt strategy follows the error or omission research outlined by Kounios and Beeman (2009) in which analytical solutions may be present and not yet verbalized. This modification helped to capture problem-solving by analysis that might have been missed in the time limit. If wrong answers were given, the participant was told that the answer was not correct, provided there was still time remaining. If the test was not solved within the time limit, the answer would be subsequently provided, and a reset line test was administered so that the participant would not continue to dwell on an "unsolved" problem. After each solved problem, the participant reported how the problem was solved. Answers could include: insight; somewhat insight; analysis; somewhat analysis.

Pre- and post-tests using the CRA problems were completed with 5 participants. One participant failed to complete the initial testing for CRA problems in the first week of the intervention and was not retested. Improvement in ability to solve problems using insight during the post-test was present in 4 out of 5 participants (80%), ranging from 2-6 response improvement from the set of 20 questions.

If the participant solved the problem in less than 5 seconds, the individual's stated method of problem-solving was recorded in the raw data but all of these responses were converted to "recognition" during analysis according to methodology used by Kounios & Beeman (2015). Although all respondents considered these moments as insight, the instantaneous solving does

not correlate to the characteristics of insight following an impasse and have been excluded as a potential artifact of the test. If they were included, the results would favour insight from 3.2 to 5.60 (P=0.10). As a group, there was an improvement of problem-solving using insight following the life coaching intervention from 2.20 to 4.00, but these results were not significant (p=0.23). Table 7 depicts the CRA results. To assess whether some participants were naturally more insightful, we compared problem-solving ability at baseline to number of insights generated during CALC and found no comparison among participants.

Table 7

Compound Remote Associate (CRA) Problem-solving Before and After Coaching (N=5)

Time Period	Mean	SD	P Value
Before coaching	2.20	1.79	
After coaching	4.00	2.00	0.23

Mindfulness

The Mindfulness Attention Awareness Scale (MAAS) is a 15-item validated scale used to measure the trait of mindfulness. It was administered at the beginning and end of the coaching program using an on-line survey. Each item on the scale had 6 possible responses ranging between: (1) Almost Always, (2) Very Frequently (3) Somewhat Frequently, (4) Somewhat Infrequently, (5) Very Infrequently, (6) Almost Never. The lowest score possible was 15 and the highest score possible was 90. There were 6 participants who completed the pre and post survey. A sample item from the MAAS scale was: *I could be experiencing some emotion and not be conscious of it*

until some time later. A complete list of questions can be found in Appendix J.

Results showed an overall increase in mindfulness in the majority of participants from 44.5/90 to 52/90 (Table 8); however, the results were not statistically significant.

Table 8

Mindfulness Attention Awareness Scale (MAAS) Before and After Coaching (N=6)

Time Period	Mean	SD	P Value
Before coaching	44.50	10.37	
After coaching	52.00	9.42	0.15

Positive Well-being (PWB)

The PWB is a validated scale that measures the positive affect of the respondent developed as part of the NIH Toolbox (www.NIHToolbox.org). Permission to use the PWB was issued by the National Institute of Health (NIH) and the on-line scoring centre scored results of the tests, see Appendix N. There were 33 items on the scale and responses range from: (1) Not at all; (2) A little bit; (3) Somewhat; (4) Quite a bit; (5) Very much. Participants were asked to indicate to what degree they had experienced that item over the past 7 days. An example item was: *I felt cheerful*. A complete scale can be found in Appendix I. The PWB was measured at two points pre- and post-program and administered on-line. Although all items on the scale were collected at both time points, due to an issue with the scoring service, only a sub-set of 15 items could be included in the scoring. Part of the agreement to use the PWB included use of the on-line scoring service that adjusted for response differences in age, gender, and ethnicity. Items marked with an asterix in Appendix I indicate the items that were included. The scale was completed by six par-

ticipants and results are shown in Table 9. According to NIH Scoring, there was no significant difference in positive well-being scores.

Table 9

Positive Well-being Scale (PWB) Before and After Coaching (N=6)

Time Period	Mean	SD	SEM	P Value
Before coaching	41.13	4.81	1.97	
After coaching	41.81	8.15	3.33	0.81

Strength Profile

Participants were asked to rate their agreement with statements on the 10-item strength profile before and after CALC. The Strength Profile has been used by *Women Together* for 9 years and developed by Tammie Ross, Program Director, for the life-coaching environment and has not been validated (Ross, 2008). The profile included statements such as: I can identify my strengths; I can choose new perspectives when I am stuck. Participants were asked to rate by Likert scale to what extent the behaviours described them at this time: 1) Not at all 2) Sometimes 3) Usually 4) Most of the time 5) Always. The lowest rank was given to no agreement and the highest rank was given to total agreement. A complete list of questions is listed in Appendix F. The lowest score a person could have was 10 and the top score a person could have was 50. Scores at each time point were weighted equally and totaled. Figure 3 indicates total scores pre and post by individual. Overall, total scores on the Strength Profile improved ($p<0.05$) from 24.67/50 (49%) to 34.83/50 (70%).

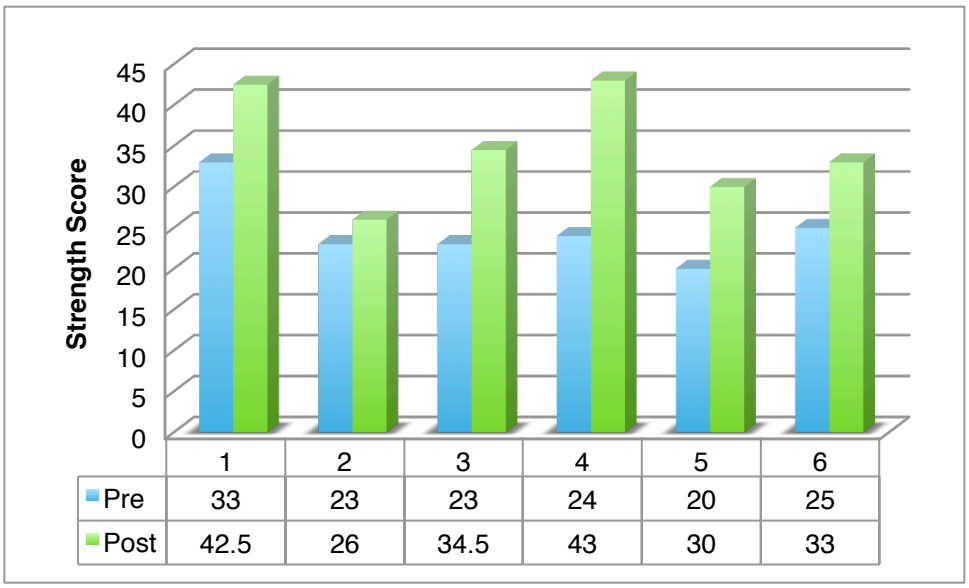

Figure 4. Strength Profile Scores Before and After Coaching for Participants (N=6)

Wheel of Life® Satisfaction

At week one and during follow-up, participants were asked to rate their degree of satisfaction from low satisfaction (1) to high satisfaction (10) among eight domains of their life including: career, money, health, friends and family, romance and significant other, personal growth or spirituality, fun and recreation, and physical environment. Based on their assessment of domains with lower rates of satisfaction, participants generated 1-3 goals with their coaches for the coaching sessions. As shown in Figure 4, life satisfaction scores on priority goals from the Wheel of Life® improved from 3.8/10 (38%) at the beginning to 6.8/10 (68%) in the follow-up ($p<0.05$).

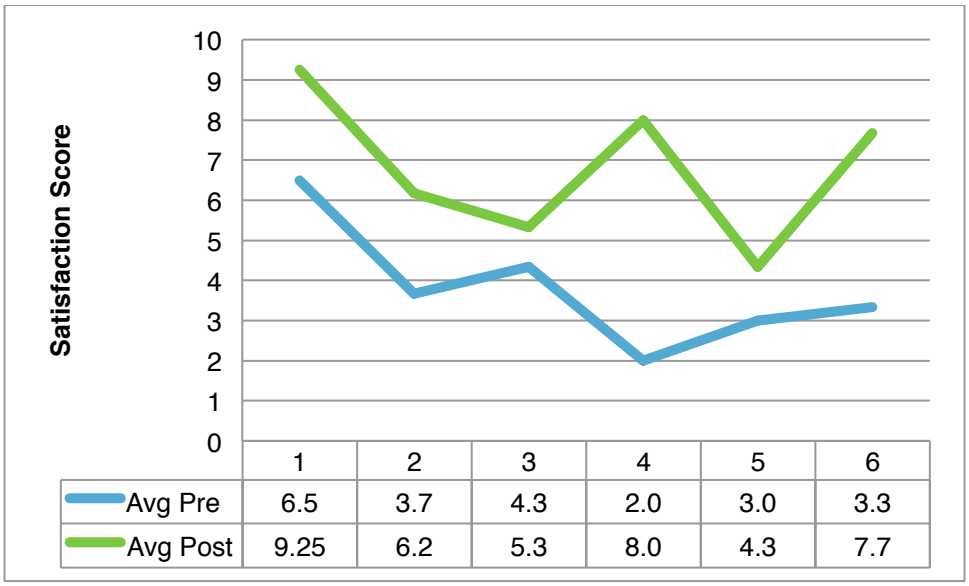

Figure 5. Wheel of Life® Satisfaction Before and After Coaching on Priority Goals for Participants (N=6)

Results Summary

During the intervention, moments of insight were reported at twice the rate of non-insight (27:12) and occurred almost five times more often than in the six months prior to CALC. Characteristics of insight were present in all cases of insight, and the coach's role in generating insight was explicitly described in 33% of insights reported. Sustained behaviour could be directly linked to insight (56%) at eight weeks follow up. Feedback from the coaches on their technique demonstrated that insight could be evoked during any one of the CALC coaching principles including balance, fulfillment and process.

By evaluating insight and non-insight in relation to strong emotion, we observed presence of insight and strong emotion together for all insights reported by participants but this result was not corroborated by independent feedback from coaches. We were likewise unable to detect a

significant relationship between insight and topic importance. In assessing whether participants were more naturally insightful, we found no comparison between problem-solving ability at baseline and the number of insights generated during CALC.

Among the validated tools used in the study, we observed an increase in mindfulness, and ability to problem-solve using insight, though not significantly. There was little to no difference detected in the scale of positive well-being. Other measures including the Strength Profile and Wheel of Life® satisfaction showed improvement, however these assessments have not been validated. The implications of these results and will be expanded in the discussion section.

Chapter IV: Discussion and Conclusions

In this chapter, results are discussed in relation to evidence from the literature review and theories of insight. That moments of insight occur more frequently during CALC has been the main finding in this study, but how the coach plays a role in evoking insight and behavioural transformation is more thoroughly examined. For explication, the phases of insight that include immersion, impasse, diversion, and generation of insight have been adopted (Kounios & Beeman, 2015) to serve as a framework for the discussion. Efforts to ensure reliability are described, as well as the limitations of the study, and recommendations for future research.

This study was designed to examine the relationship between moments of insight and the behaviour subsequently produced or altered by the insight. By comparing insight to non-insight during CALC, the characteristics of insight were successfully mapped to subsequent behaviour change. It was hypothesized that while participants may be expected to pursue behaviour change regardless of whether they experience moments of insight, the presence of insight represented a breakthrough. Based on the characteristics of insight, it was assumed that insight would be accompanied by strong emotion, topic importance, an altered perspective, and sustained behaviour change compared to non-insight.

From the combined 39 session feedback forms completed by coaches and participants, insight was reported twice as often as non-insight (27:12), and at a rate that was over 5 times higher than insight reported in the 6 months prior to the intervention. Qualified against the established characteristics of insight along with narrative accounts, these results demonstrate that a greater number of insights were evoked during CALC. This is one of the few coaching studies to examine the relationship between insight and behaviour, and perhaps the first to be designed pro-

spectively. While life-coaching efficacy has been established by other studies (Passmore, 2014; Theeboom, 2014), insight has been difficult to study outside of the lab since it can be an unpredictable phenomena.

Immersion and Impasse

The first two phases of insight are described as *immersion* and *impasse* (Kounios & Beeman, 2015). Earlier (see chapter 1) a summary was provided of how synaptic connections in the brain became strengthened in the phrase "what fires together wires together" (Van der Kolk, 2015). As a person's range of ability and capacity increased through experience, the associated positive and negative attribution to those experiences strengthened, with many behaviours becoming automatic and subconscious (Siegel, 2010). While these automated behaviours efficiently serve as the dominant operating paradigm, they can also result in "being stuck" in repetitive, ill-serving behaviours (Siegel, 2010). This habitual behaviour is similar to what happens when someone reaches an impasse during problem-solving. Through the lens of neuroscience, it is increasingly possible to postulate how these mental functions might have taken place during CALC. If a behaviour response was automated, one of the roles of the coach was to bring attention to subconscious operators. In CALC, subconscious operators are frequently referred to as "saboteurs" or "gremlins" in order to help the participant distinguish a thought he or she is having from his/her self-identity (Kimsey-House, 2011). The goal-setting function of CALC (Kimsey-House, 2011) serves as the starting point to engage the topic at deeper levels of awareness to promote what has been largely subconscious. The coach does not predict what life experiences or predisposition caused the currently held belief and subsequent behaviours, rather the coach's role is to follow the participant's topic interest without judgment and with authentic curiousity (Kim-

sey-House, 2011). In the current study, participants set goals and coaches discussed "saboteurs" as part of the curriculum. The awareness that developed during these coaching techniques may have helped the participant notice that a previously unquestioned assumption was a limiting choice. Like the phases of topic immersion and impasse, participants did not generate an insight without realizing they had been stuck, and this characteristic was present in the accounts of insight that were reported.

Diversion and Insight

Research in neuroscience has provided evidence of ways that individuals can move beyond the automatic behaviour in the insight phase called *diversion*. Following *immersion* and *impasse*, researchers have shown that distraction from the problem, improved well-being and mindfulness, as well as priming for insightful thinking are all ways to evoke the final phase of insight, which is the insight itself (Kounios & Beeman, 2015). In the interest of evaluating how some of these aspects would play out in a coaching intervention, the study was designed to measure mindfulness, well-being, and insightful thinking using validated questionnaires and the CRA word problem test. While results of the MAAS (Brown & Ryan, 2003), and CRA showed improvements, it cannot be confirmed by these measures that the traits of problem-solving with insight or mindfulness improvements were statistically significant. In addition, PWB scores showed little difference in positive well-being. In terms of actual insights reported (versus word problem-solving), it was found that insights were more frequent during CALC in the study, and this result was statistically significant ($p<0.05$). That the finding in this study was inconsistent with previous research on how insight is generated may have been due to a small sample size or a poor choice of measures for these traits in the context of the study. It may also be possible that

mindfulness, positivity and problem-solving ability were not the mechanisms by which insight was evoked during CALC.

By comparing CRA problem-solving with insight to actual insights during coaching, there was no evidence that some participants were more naturally more insightful than others. It could be that CRA problems were not good comparators to real world problem-solving, or alternatively, that people, as a relational composite of their genetics, emotions, and experience employ left-brain and right-brain thinking in complementary rather than competitive approach to problem-solving.

Without being able to show significance for improvements in mindfulness, positive well-being, and problem-solving with insight, it is important to postulate how other coaching techniques may have served the purpose of expanding insightful thinking. It must be stressed that there was no formal recording or analysis of the specific coaching techniques utilized by the coaches in this study; instead, we are postulating based on the core competencies of CALC-trained coaches. These coaching methods likely included: adopting new and unrelated perspectives; using metaphor; and exploring geography (Kimsey-House, 2011). In the first case, a specific technique in CALC called *balance* coaching happens when the participant imagines and explores the topic from different perspectives. Through multiple perspectives, which may be represented as objects in the room, a metaphor, a body posture or part of the room geography, the participant then references the problem using the new perspective. During feedback sessions, participants referenced their experience of actively expanding their range of possibilities/perspectives, which helped them to think about topics in a new way. The deliberate liberation from a single perspective may play a role in evoking insight and could be an area for further

inquiry.

Use of metaphor and allegory (Kimsey-House, 2011) is another way that CALC may have engaged the right brain toward insights. By exploring metaphor, the coach may serve the priming function that was exhibited in lab simulations of problem-solving. As demonstrated by the study of CRA problems using EEG and fMRI, a person who is primed to the task can become more receptive to insightful thinking. Kounios and Beeman (2015) described this insightful mindframe as the neural equivalent of a lit-up Christmas tree. By using metaphor and allegory, the coach is engaging creative thinking. Likewise, it is anticipated that moving about the room, engaging in body postures, and role-playing are also techniques that coaches may have used to engage the participant creatively, and primed toward insight as a result. Called "intuitive intelligence", Kimsey-House et al believe that intuition is extremely helpful to cultivate in coaching as one of the "many ways of knowing" (2011, p. 50).

De Haan's (2008) prior research on insight may help to explain what happened during CALC in service of insight. De Haan (2008) surmized that creating doubt in the participant was an essential feature of coaching to enable breakthroughs in awareness. Neuroscience researchers demonstrated that the biggest jolt of electrical current in the brain occurred at the moment of insight. The second biggest jolt of brain current measured was called the N400 or, the active resistance to something new (Kounios & Beeman, 2015). The efficiency of the left brain automated behaviours so humans could react quickly and perform complex tasks efficiently. When something novel appears, the brain naturally tries to make it fit in the current set of beliefs and behaviours. When new information cannot be explained or resolved, a warning alarm is triggered that neuroscientists call the N400. To move past the N400 and into insight, coaches must have a

mechanism for moving past the dominant belief system. We propose that coaches may have inclined clients toward insightful thinking in a few key ways. By asking powerful questions and probing resistance (Kimsey-House, 2011), the coach might have moved past the characteristic N400 resistance to change. According to research by Klein and Jarosz (2011), the ability to produce insight was associated with a willingness to explore contradictions. This paradigm shift was modeled in our study with a participant who was interested in improving her career. Over the period of several coaching sessions, this attitude was probed and resulted in a moment of sudden insight and a changed perspective of her relationship to her work. This was the participant's account of her related insights:

> I wasn't meshing with my manager very well and I was losing it because I hadn't been able to change it and I didn't know how to change it and what (my coach) really helped with was about how was I looking at that. What happens if I lose my job? Is that the end of the world or is it a good opportunity to move on and do something else? It was an eye-opener and then somewhere in there, it was around the same time, I have a lot of issues with my mom, not very many positive things that I remember about growing up. But all of a sudden, I started remembering all the good stuff that happened and the nice things that my mom used to do and I hadn't thought of what was good, just all the negative stuff… I had two aha moments at about the same time, this was on top of it all, I started to remember positive things about my mom.

The example above is suggestive of the possible neural "hard-wiring" that can occur from repeated exposure to a negative experience (Siegel, 2010). The initial insight described produced a

subsequent and related insight that was even more profound and tied to earlier life experiences that were negative. While liberating herself from negative feelings about her work, the participant also unhinged other previously negative feelings toward her mother with multiple insights.

Other research (Ding, 2015) showed a correlation between mindfulness and brain activity with insight. Since mindfulness scores slightly improved in our study in the absence of mindfulness training, it is possible that CALC was fostering attention modulation by some other mechanism. After an impasse has been reached during problem-solving, the right brain takes the mental processing into the subconscious, continuously trying more remote associations. Since the participants experienced moments of insight during coaching, it may be that the coach helped modulate between left and right brain and actively called upon the less obvious solutions to the problem. Currently, brain activity during movement is still prone to inaccuracies but in a short time, it may become possible to validate these propositions in natural coaching environments using portable and wireless EEG gear (Matthews, 2007).

Linking Insight to Behaviour

When an insight arrives, it can be triggered by new data (Klein & Jarosz, 2011), is accompanied by emotion and results in a new mental construct about a topic. However, the generation of insight doesn't necessarily cause a sustainable change in behaviour (Klein & Jarosz, 2011). While moments of insight could be directly linked to behaviour change in 56% of the cases (n=15), not all moments of insight could be tracked to sustained behaviour change. This result may have been due to a) insufficient detail provided by the participant, b) coaches reporting on insight during coaching but were unable to comment on behaviour after their last contact with participants, or c) the fact that only perspective changed and not behaviour.

The pattern observed in the study in most cases was that the moment of insight and subsequent new perspective was supported through multiple coaching sessions to strengthen the relationship to the new mental construct. This was exemplified in the participant who quit smoking. Although her moments of insight on the habit of smoking were related to stress and self-judgment, subsequent coaching provided support for negotiating her own terms for quitting, which ultimately led to success. It should be noted that the definition of goal success was based on the participant's view of having met the goal. For example, the participant who quit smoking had relapse behaviours during the intervention but described herself as having quit smoking at the end of data collection and this was not independently verified by objective data measures.

Drawing from psychology, there were three principle ways that types of "talk therapy" helped people who received counselling: change the behaviour to change the mind; change the mind to change the behaviour; and only emotion can change emotion. All of these types of change were observed in the study and it is proposed that CALC is flexible enough to employ all three of these types of talk therapy through the guiding principles of fulfillment, balance, and/or process coaching.

Fulfillment coaching is in service of the participant's aspirations and helps to connect with core values so that any behaviours or assumptions that are incongruent with the deeper value become de-stabilized. In this way, a participant's behaviour may be prompted to change, prior to the change in perspective. The following example was how the coach handled chronic doubt with her client:

> (We) looked at creating a structure when she starts to doubt herself when looking at other's success or marketing strategy.

Creating a structure in CALC is a way to commit to doing something in service of a deeper value irrespective of the confidence to do so (Kimsey-House et al., 2011). Once a person is connected to a core value, this structure becomes an internal compass to guide actions, rather than repeating habituated or automatic responses. In this way, the behaviour is changed while the agreement and thought congruency is gradually built around it as new, and hopefully more positive, experiences follow. The structure around the new behaviour appears over time as in the following quoted example:

> I had a call with my coach and I was saying to her - this is great, and this is going well, and I'm so excited about this, and I just have no doubt in my mind that everything is going to work out. Especially compared to a year ago, I have so much more faith in my instincts. When preparation meets opportunity, magical things happen

In balance coaching, what changes is the perspective towards a topic. Below is an example of balance coaching that occurred during the study from the perspective of one of the coaches:

> We looked at the personal development exercise. She had filled out the "Bad" and "Ugly" columns and left the "Good" column blank. She said she really was unsure about what is good about her. I shared how I experience her and checked to see if these resonated. This began a brainstorming session as she brought light to different aspects of herself. There were many good things about her that she never considered as good. The entire session was spent exploring this list: she considered what it felt like to not have anything and then what it felt like to have

a full list. She was moved to tears many times.

In sessions that focused on process coaching, the role of the coach was in support of the participant's present emotions in order to identify and validate the current state. The following example was a coach's progress note of a process session:

> Awareness around her own anger. What does it look like, feel like, how does it manifest in her body, where does it live? What happens when she holds it in her hands? What is the fear? How can she be safe enough to express it?

Although the anger was limiting the participant, she was also afraid to express it and did not feel safe doing so. Two sessions later, the same participant found a place to express anger safely - with her coach. Here is the coach's description of the subsequent session:

> Client came into this session really just needing a soundboard. When I offered that to her, she began to cry. I reminded her that she is capable and worthy. She was not in a place to be able to really hear that today. She was very stressed out and angry. So, we really just had to be with that.

In terms of progress through coaching, the participant was later able to rally toward trying new things because she had begun to navigate her emotions rather than avoiding them. In her words:

> I guess the best way to say it is that I realize that I stopped avoiding the negative parts of myself and I actually started facing them head on, because I kept putting them in a box and bypassing them, and I started facing my fears.

Taken in progression, it is impossible to assert that moments of insight are the sole cause of a behaviour change. In fact, the examples indicate progression toward insight is

more exploratory than linear and can include other types of problem-solving in service of one's goals. This study provides evidence that while insights are important features of CALC and represent breakthroughs in awareness, they did not always track to subsequent behaviour. This is consistent with earlier research by Klein and Jarosz (2011) that did not include life coaching, where results were split between insight that generated better understanding (54%) and insight that created new action (46%). While insight plays a role in the produced outcome of behaviour, more research would be required to explore these features.

Sustainability of Changes

Where participants reported changes in behaviour or understanding as a result of CALC, they were asked to rate their confidence in maintaining these changes. The following example demonstrates one participant's state of confidence and understanding of the change:

> So I had to take a step back, sometimes, and look at things from a different point of view. Part of the reason my job is getting rid of me is that they are all into sales right now and I was having a really tough time with it. And right now for the first time in a year, I'm over a hundred percent in sales. I'm not really sure what's working but whatever it is I am doing it.

Having reviewed the participant's progress on this goal, this could be an example of a changed perspective that became the new operating paradigm. At eight weeks' follow-up this participant was not really sure what was working to produce her success, but during the coaching, she gained several insights on this topic and these now appeared to be absorbed into her current set of beliefs.

Goal Flexibility

To determine whether behaviour changes were a result of insight or achieved without insight, insights were tracked throughout the program in comparison to goals that were achieved and sustained at 8 weeks' follow-up. Looking at results from the view of goals achieved, recall (chapter 2) that each participant was invited to identify three priority goals. Among six participants, a total of 13 goals were pre-determined and nine of these goals were achieved. Insight was directly attributed in each of these cases. Although all participants made some progress on their stated goals, it would have been easier to assess goal attainment if the goals had been specific, measurable, and achievable. For the part of the coaches, SMART goal attainment may be incongruent with the *Women Together* program practice of goal-flexibility in service of the client agenda.

Efforts to Maintain Rigor

According to Watkins and Gioia (2015) MMR should demonstrate efforts to maintain study rigor on both qualitative and quantitative results. In particular, is the qualitative data credible, dependable, confirmable, and transferable? Does the quantitative data converge in explanation of the intended measure (Watkins & Gioia, 2015)?

Addressing aspects of credibility, the ability to track moments of insight throughout the coaching intervention and then collect an account of sustained changes at 8 weeks' follow-up shows a progression from insight to subsequent behaviour by matching characteristics of insight to produced behaviour through narrative analysis of the participant and coach accounts. Aside from having a definition of insight during CRA testing in order to distinguish it from problem-solving with analysis, participants and coaches were not made aware of the characteristics of in-

sight and yet narrative accounts repeatedly described sudden onset, strong emotion, topic importance and change in perspective that is characterized by the phenomena of insight.

In terms of dependability, the research was conducted as designed and with attention to all planned measures. Dependability may have been compromised by a smaller than anticipated study population and the fact that participants and coaches did not complete feedback forms after all sessions. Nevertheless, the combined response rate was 72% and we believe it is adequately representative of the sessions that occurred. A more thorough method of collecting session data would have been audio recordings but we were concerned that this might have limited the relationship and candor achieved between coach and participant and result in fewer insights.

The main premise of data confirmability is the degree to which the data inquiry may have been influenced by the researcher. Toward this end, all data collection instruments have been represented in the appendices for scrutiny. During the intervention, the only contact the researcher had with the participants was to send weekly reminders by e-mail for data input. The follow-up survey was conducted by phone. In all examples, it is the participant's and coach's own words that provided the evidence. Although the researcher had prior experience with the coaching program, no coaching was given to any of the participants by the researcher.

In relation to transferability, which in MMR is not intended to mean the results are generalizable, the study demonstrates this value if it is applicable to other situations. Since the study examined moments of insight in the practice environment of CALC, it is unknown whether other coaching methods would achieve similar results. As an inquiry into what conditions evoke insight, the study served to confirm many of the characteristics of insight that have been brought to light by lab-based simulations using fMRI and EEG.

Validity is the how the quantitative study measures serve to evaluate the topic of inquiry. Although validated measures and testing showed some improvements in mindfulness and problem-solving ability, the well-being results did not reveal a difference, and none of the changes were statistically significant. It is fair to say that in terms of quantitative measures, the study did not achieve results that could be considered valid. This may be due to a small study sample, the short duration of the study, and measures that may not be sensitive enough to detect change in these conditions. As Objective measures of neural activity by wireless EEG continue to evolve, future studies could employ this technology to confirm the results of this study.

Finally, Watkins and Gioia (2015) challenge MM researchers to pay attention to contrary examples in the data and offer rival explanations. In this study, behaviour changes that could not be attributed to insight and participant reports of insight that did not meet the criteria have been noted. Although we expected problem-solving to occur regardless of insight, it was helpful to explore how important topics were approached from different angles to evoke the insight. At the time of report, neither participant nor coach could have anticipated an insight would ensue, but flexibility in the coaching agenda allowed goal attainment where it was possible. Had coaches prioritized topics around the goals, it is unlikely that progress would be made. In most cases, at 8 weeks' follow-up participants were still working on at least one priority goal, but this was not perceived as failure in the goal flexible purview that is CALC.

Study Limitations

In terms of reflexivity, it should be noted that both the Principal Investigator and Co-investigator have been trained in Co-Active Life Coaching (CALC) and are currently practicing

as life coaches. The Co-investigator had exposure to the Women Together organization since January 2015, and participated previously as a coach in the program.

As a study of insight, it is unknown how gender may have played a part in the generation of insight and therefore, the effect that all participants are female on the outcome is unknown and possibly a study limitation. However, review of coaching efficacy to date has summarized that gender of participants does not alter the effectiveness of life coaching (Passmore & Fillery-Travis, 2011).

The design of the study did not provide for multiple coders, which may have decreased study credibility. As a study about insight, the definition of insight provided to the participants and prompts to describe insights during coaching increased the potential for a response bias. Two participants had prior experience with coaching and while this may have either improved retention or impacted results, the effect is unknown. SMART goal setting was indicated during the methodology but not consistently practiced by coaches. Some participants had ambiguous goals that were challenging for them to address in the time frame. In addition goal success was measured by self-report and goals were not validated by objective measures, which is an additional caution of potential response bias.

While the majority of participants were coached by phone, one participant had half of her life coaching sessions in person. In-person coaching could have altered the outcomes, although the participant experienced the fewest reported insights in the study and was primarily engaged in process coaching. The issues encountered with the PWB scoring through the NIH may have adversely impacted the resulting measure of psychological well-being.

The study had a small number of participants, and with the exception of frequency of insight, not significant results. A larger number size would have been necessary to derive statistical power for the measures chosen. During the design of the study, the researcher was unable to find any prospective field based studies of moments of insight from which to calculate power based on anticipated effect. A post hoc calculation of power for MAAS showed a sample size of N=16 at 80% statistical power would have been needed. For the CRA tests, a sample of 30 participants (N=30) would have been needed for power at 80%.

Conclusions

What impact did the experience of insight during coaching have on sustaining behaviour change and how was CALC helping to produce these outcomes? The current study established that moments of insight occurred with significantly greater frequency during CALC and insight could be tracked to sustained behaviour changes in relation to identified goals. Having participants and coaches prospectively track insights as they occurred during CALC enabled moments of insight to be qualified against the known characteristics of insight from the literature including a change in perspective. The sustainability of behaviour changes that were produced through CALC was reassessed at eight weeks follow-up. It was discovered that while all behaviour changes could be traced back to insights, not all insights resulted in behaviour change. Although less frequent, there were also a few cases of non-sight that produced behaviours in service of goals. The key finding from the study is that insight is important for development, and CALC creates conditions that increase the potential frequency of insight.

A secondary aim of the study was to examine the probable role the coach played in evoking insight and how this occurred. It was evident that coaching practices were referenced by participants during moments of insight, and it had been hypothesized that coaching might generate insight by improving mindfulness, positive well-being, and problem-solving. Although there was some improvement in measures of mindfulness, positive well-being and problem-solving, these were not statistically significant. This result may have been due to the small sample size in this study or the self-report questionnaires that were used. Other possible explanations of how coaches could be supporting insightful thinking were explored in the discussion section that are con-

gruent with evidence in neuroscience and could be researched, in future studies, with more sophisticated measures of brain activity such as wireless and portable EEG.

The study also considered whether some people were naturally more inclined towards insight by comparing actual frequency of insights experienced during coaching and the participant's ability to solve problems during the CRA word test. No relationship between the lab-based test and real world insights was detected.

Not all achievements reported during the study were directly attributable to a moment of insight. It may be proposed that incremental analysis (non-insight) and insight are not binary processes for problem-solving but that insight is particularly useful when a solution exists outside the range of the problem-solver's current knowledge or awareness. In light of the positive results of coaching interventions, participants may be expected to pursue behaviour change during coaching regardless of whether they explore topics using incremental analysis or experience a moment of insight, but that insight represents a breakthrough in understanding.

Neuroscience research has provided evidence that a person's mind can be primed through the phases of insight to be more inclined to insightful thinking. By engendering insight during CALC, we propose a potential connection to this priming function so elegantly stated by Louis Pasteur that "chance favours the prepared mind" (Debré, 2000). Although mindfulness, positive well-being, and problem-solving ability were examined in the context of CALC, the exact mechanisms by which insights were evoked during coaching is still an area for more research. Future research in this area should endeavour to include objective measures of brain activity during insight such as EEG. Continuous improvements in wireless and portable EEG will make this research a possibility in a wider range of research environments.

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Appendices

Appendix A: Approach Script

Subject: Study Linking Insight to Behaviour Change

A graduate student named Trae Robinson from Western University is currently conducting research with Women Together. The purpose of this study is to assess problem-solving ability during life coaching to determine whether having moments of insight compared to typical problem-solving (by incremental analysis) improves a person's uptake and maintenance of change behaviours.

The study will take place from Sep-Dec 2015, with a follow up survey in Feb 2016. All women in the Women Together program are invited to participate in the study. Participation in the study will take an additional 2 hours and 10 minutes of your time.

You may not directly benefit from participating in the study but information gathered may provide evidence for the value of life coaching and breakthrough moments of insight. The results of the study will be shared with Women Together but will not include items that could identify you personally.

Participation in the study is voluntary and no information can be used without your consent. More details are available in the letter of information, available in the orientation package. If you have any questions about the study, please call or text Trae Robinson at XXX-XXX-XXXX or email XXXXX@XXX

Appendix B: LOI Participant

Health and Rehabilitation Sciences

Project Title: Linking Insight to Behaviour Change in a Life Coaching Intervention for Women

Principal Investigator: Dr. Donald Morrow, Faculty of Health Sciences

Letter of Information Participant

Invitation to Participate
You are being invited to participate in this research study about moments of insight during life coaching because you have enrolled in Women Together.

Purpose of the Letter
This letter is meant to provide you with information required for you to make an informed decision regarding your participation in this research.

Purpose of this Study
This purpose of this study is to assess problem-solving ability during life coaching to determine whether having moments of insight compared to typical problem-solving (by incremental analysis) improves a person's uptake and maintenance of change behaviours. Moments of insight are those "Aha" or "lightbulb" moments. They represent a tangible event that provokes a change of mind and this is an area of interest in the study of behaviour change and in fields such as counselling and life coaching.

Inclusion Criteria
You are eligible if you have been accepted to the Women Together program for the Fall 2015. Remote participation is permitted and English-speaking women can participate from anywhere in the world. Anyone who is taking part in the program will be eligible to participate.

Exclusion Criteria
Since data collection will take place via internet and phone, women who do not have access to a computer, internet and phone will be excluded from the study.

Study Procedures
If you agree to participate, we will ask you about your demographic information including age range, education level, reasons for seeking coaching, initial goals and prior experience with

coaching or counseling in the last 5 years. You will also be asked about goals derived from the program's Wheel of Life exercise in the first week of the program.

Since everyone thinks differently (called individual differences), your ability to solve word problems and whether you used insight or analysis to solve them will be evaluated with a timed test at the beginning and end of the study. This is a test with 20 word problems (30 seconds each) and it may take up to 20 minutes of your time. You will be given a brief orientation to distinguish between insight and analysis. This test helps us understand whether you make progress in the coaching program without being compared to someone else.

You will also be asked to complete questionnaires to scale Psychological Well-Being and Mindfulness at baseline, mid-point and after the program ends. These questionnaires take 2-3 minutes each to complete.

Following each one-to-one coaching session (a total of 9 sessions), you and your coach will independently complete a brief Session Feedback Form created to track types of problem-solving if any were experienced during coaching (sudden insight or analysis). Each report will take 5 minutes but if you experience a sudden insight, we will ask you to provide more detail about your experience and this could an additional 10 minutes.

Eight weeks after the program has ended, we would like your permission to follow-up on your progress and whether you have changed behaviours as a result of coaching and whether these changes have been sustained. This will take 10 minutes.

All together, we anticipate that your participation in the study will take a total of 2 hours and 10 minutes.

Possible Risks and Harms
There are no known or anticipated risks or discomforts associated with participating in this study.

Possible Benefits
You may not directly benefit from participating in this study but information gathered will be presented to Women Together and may provide evidence for the type of life coaching and mechanisms that encourage insight as well as a better understanding of insight in general. The study may also contribute to evidence to support Co-Active Life Coaching as an aid to helping people reach their potential.

Compensation
You will not be compensated for your participation in this research but your voluntary participation will be greatly appreciated.

Voluntary Participation

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your participation in Women Together.

Confidentiality

All data collected will remain confidential and accessible only to the investigators of this study. If the results are reported or published, only group data that does not identify you will be shared. If you choose to withdraw from this study, data collected during your participation will remain part of the study unless you specifically request that your data be removed and destroyed. While we will do our best to protect your information there is no guarantee that we will be able to do so. Representatives of The University of Western Ontario Non- Medical Research Ethics Board may contact you or require access to your study related records to monitor the conduct of the research.

Contacts for Further Information

If you require any further information regarding this research project or your participation in the study you may contact Dr. Donald Morrow, XXX-XXX-XXXX
XXXXX, XXXX@xxx and Tracy Robinson (MSc Candidate), XXX-XXX-XXXX,
XXXX@xxx.

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics (xxx) xxx-xxxx, email: xxx@xxx.

This letter is yours to keep for future reference.

Appendix C: E-mail Script

Dear Women Together,

It was great to meet you at orientation. By now most of you know I'm doing graduate studies in health promotion at Western and *Women Together* is the host site for research Linking Insight to Behaviour through Life Coaching. I have attached the Letter of Information that explains the study in detail in case you have not had a chance to read about it.

Insight has been studied extensively in labs using brain imaging but these are all simulations of problem-solving ability. The present study extends to the field to ask what difference does it make if you experience sudden insight about yourself (right brain) or gain awareness incrementally (left brain). I hope you will read the attached letter and consider whether you would like to be involved in this research.

Please feel free to ask me any questions as you consider whether you wish to participate in the study. Over 14 weeks, it will take an extra 2 hrs 10 min of your time. Your participation is voluntary and you may withdraw from the study at any time.

Please reply by e-mail just to me so that your response and any questions you have can be confidential. If I have your consent, I will follow up with you for the initial online surveys.

Thanks,
Trae Robinson
MSc candidate
Western University

XXXXXX@xxx

Appendix D: LOI Coach

Western HealthSciences

Health and Rehabilitation Sciences

Project Title: Linking Insight to Behaviour Change in a Life Coaching Intervention for Women

Principal Investigator: Dr. Donald Morrow, Faculty of Health Sciences

Letter of Information Coach

Invitation to Participate
You are being invited to participate in this research study about moments of insight during life coaching because you are currently participating as a life coach with Women Together.

Purpose of the Letter
This letter is meant to provide you with information required for you to make an informed decision regarding your participation in this research.

Purpose of this Study
This purpose of this study is to assess problem-solving ability during life coaching to determine whether having moments of insight compared to typical problem-solving (by incremental analysis) improves a person's uptake and maintenance of change behaviours. Moments of insight are those "Aha" or "lightbulb" moments. They represent a tangible event that provokes a change of mind and this is an area of interest in the study of behaviour change and in fields such as counselling and life coaching.

Inclusion Criteria
You are eligible if you have been accepted as a coach to the Women Together program for the Fall 2015 and your matched coachee has consented. Remote participation is permitted and English-speaking coaches can participate from anywhere in the world.

Exclusion Criteria
Since data collection will take place via internet, participants who do not have access to a computer and internet will be excluded from the study.

Study Procedures
If you agree to participate, you will be asked to complete Session Feedback

Forms (SFF) after each one-to-one coaching sessions. The forms were created to track types of problem-solving if any were experienced during the coaching (either moments of insight or incremental analysis). You will be given a brief orientation to distinguish between insight and analysis.

There are 9 one-to-one coaching sessions and it will typically take 3-5 minutes to give feedback on-line after each session. If the participant you are coaching experienced a moment of sudden insight during that session (or leading up to it), we will ask for you to describe your observations of that event in more detail, which may take an additional 10 minutes.

Since coaches are not required to maintain specific topic order, you will also be asked to complete a curriculum topic checklist at the end of the program to compare actual topic coverage against the proposed curriculum.

Possible Risks and Harms
There are no known or anticipated risks or discomforts associated with participating in this study.

Possible Benefits
You may not directly benefit from participating in this study but information gathered will be presented to Women Together and may provide evidence for the type of life coaching and mechanisms that encourage insight as well as a better understanding of the insight in general. The study may also contribute to evidence to support Co-Active Life Coaching (CALC) as an aid to helping people reach their potential.

Compensation
You will not be compensated for your participation in this research.
Voluntary Participation
Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your participation as a coach in this program.

Confidentiality
All data collected will remain confidential and accessible only to the investigators of this study. If the results are reported or published only group data that does not identify you will be shared. If you choose to withdraw from this study, data collected during your participation will remain part of the study unless you specifically request that your data be removed and destroyed. While we will do our best to protect your information there is no guarantee that we will be able to do so. Representatives of The University of Western Ontario Non-Medical Research Ethics Board may contact you or require access to your study related records to monitor the conduct of the research.

Contacts for Further Information

If you require any further information regarding this research project or your participation in the study you may contact Dr. Donald Morrow, XXX-XXX-XXXX x XXXXX, XXXX@xxx and Tracy Robinson (MSc Candidate), XXX-XXX-XXXX, XXXX@xxx.

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics (xxx) xxx-xxxx, email: xxx@xxx

This letter is yours to keep for future reference.

Appendix E: Ethics Approval

Western Research

Research Ethics

Western University Non-Medical Research Ethics Board
NMREB Full Board Initial Approval Notice

Principal Investigator: Dr. Donald Morrow
Department & Institution: Health Sciences\Kinesiology,Western University

NMREB File Number: 107012
Study Title: Linking Insight to Behaviour Change in a Life Coaching Intervention for Women
Sponsor:

NMREB Initial Approval Date: September 10, 2015
NMREB Expiry Date: September 10, 2016

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Data Collection Form/Case Report Form	Follow-up Survey	2015/07/21
Data Collection Form/Case Report Form	Session Feedback Form - Participant	2015/07/21
Data Collection Form/Case Report Form	Week 1 Survey	2015/07/21
Instruments	CRA Problems Pre Post	2015/07/21
Data Collection Form/Case Report Form	Get to Know You Survey	2015/07/21
Recruitment Items	E-Mail Phone Script	2015/07/21
Recruitment Items	Approach Script	2015/07/21
Instruments	MAAS Mindfulness Scale 19-Aug-15	2015/08/19
Instruments	PWB Pos Aff Questionnaire	2015/08/19
Recruitment Items	Web Message	2015/08/19
Instruments	Session feedback form	2015/08/19
Instruments	Curriculum checklist	2015/08/19
Revised Letter of Information & Consent	Coaches	2015/09/09
Revised Letter of Information & Consent	Participants	2015/09/10
Revised Western University Protocol		2015/09/10

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Appendix F: Get to know you Survey

Insight Study: Get to Know You Survey

Part A: Demographics

1. Your age
___ 18-29 years old
___ 30-49 years old
___ 50-64 years old
___ 65 years or older

2. Your education
____ some high school
____ high school graduate
____ trades/vocational training
____ college graduate
____ university graduate
____ post graduate (ie. masters or phd)

3. Reasons for seeking life coaching (open text response)

4. Initial goal(s) from Women Together application (open text response)

Part B: Experience with Insight

5. Have you had previous experience with life coaching or counseling in the last 5 years?
___ Yes
___ No

6. If yes, for how long?
____ years ____ months ie 0 years, 4 months

7. Have you had any recent moments of sudden insight (in the last 6 months)?
___ Yes
___ No

8. If you indicated Yes, could you take a few minutes to describe the moment(s) of sudden insight in your own words? (there is no word limit)

Part C: My Inner Coach

9. To what extent do the following behaviours describe you now:
(1) Not at all (2) Sometimes (3)Usually (4) Most of the Time (5) Always

Please rate the following:	1	2	3	4	5
1. I can identify my strengths	( )	( )	( )	( )	( )
2. I can identify my core values	( )	( )	( )	( )	( )
3. I know how to create SMART goals that are aligned with my values	( )	( )	( )	( )	( )
4. I can manage self-limiting beliefs/obstacles	( )	( )	( )	( )	( )
5. I can identify stressors and find ways to manage these stressors	( )	( )	( )	( )	( )
6. I can focus on the positive in pursuit of my goals	( )	( )	( )	( )	( )
7. I can choose new perspectives when I am stuck	( )	( )	( )	( )	( )
8. I am aware of my thoughts and feelings	( )	( )	( )	( )	( )
9. I can speak authentically about my experience of a situation	( )	( )	( )	( )	( )
10. I dare to dream and be supported by others	( )	( )	( )	( )	( )

Thank you for completing this survey.

Appendix G: Week 1 Survey

1. Please summarize the outcome of your exercise in Week 1 on wheel of life satisfaction score and goals.

2. Based on my Wheel of Life, satisfaction score I choose to focus coaching sessions on:
(Please place current life satisfaction score beside area(s) of focus)

___Career
___Finance
___Physical Activity
___Romance/Significant Other
___Health
___Fun and Recreation
___Personal Growth /Spirituality
___Friends

3. My goal related to my biggest priority.

4. My goal related to my next biggest priority (if applicable).

5. My goal related to my third biggest priority (if applicable).

That's all for this week. Check in after you have your first session with your coach.

Appendix H CRA Problems

Compound Remote Association Problems
Linking Insight to Behaviour in a Coaching Intervention for Women

When you solve a problem with insight, the answer suddenly comes to mind even though you are unable to say how you reached the solution. Sometimes this is called the 'Aha moment'.

When you solve with analysis you have consciously tested out different words until you found the solution. You are typically able to report the logic steps that you used to reach a solution using analysis.

In this short exercise you are asked to solve 20 word problems. The first slide will be an example, which will be followed by the correct answer. The problems are designed to have only one correct answer.

You are given 30 seconds to complete each problem. If you have a guess, please say it out loud. You will then be asked to report whether you solved the problem using a series of tries and retries or by using insight.

Sample question:	Answer: apple
pine crab sauce	pine apple crab apple apple sauce

This is a resting and reset task. All you do is look at the two sets of lines and say "yes" if the lines have the same number of lines facing left or "no" if the number of lines facing left is different. Here is an example: / / \ and / \ / In this case the answer is yes

Time 1 Test Questions

Trial	CRA Problem
1	sleeping bean trash
2	dust cereal fish
3	light birthday stick
4	food forward break
5	peach arm tar
6	water mine shaker
7	palm shoe house
8	basket eight snow
9	wheel hand shopping
10	right cat carbon

11	home sea bed
12	sandwich house golf
13	cross rain tie
14	french car shoe
15	boot summer ground
16	chamber mask natural
17	mill tooth dust
18	main sweeper light
19	office mail hat
20	fly clip wall

Time 2 Test Questions

Trial	CRA Problem
1	age mile sand
2	catcher food hot
3	wagon break radio
4	tank hill secret
5	health taker less
6	life card mask
7	dress dial flower
8	force line mail
9	guy rain down
10	light skate stick
11	down question check
12	animal black rat
13	officer cash larceny
14	horse thumb pepper
15	carpet alert ink
16	master toss finger
17	hammer gear hunter
18	knife light pal
19	foul ground mate
20	change circuit cake

Source of Test: Bowden & Jung-Beeman (2003b)

Appendix I Positive Affect 18+

NIH Toolbox Emotion
NIH TB Positive Affect CAT Age 18+

*Due to scoring service parameters, although the whole test was administered, only items marked with * could be scored.

Context In the past 7 days:
Response Options 1=Not at all; 2=A little bit; 3=Somewhat; 4=Quite a bit; 5=Very much

Items Please rate the following:	1	2	3	4	5
*1. I felt cheerful.	( )	( )	( )	( )	( )
*2. I felt attentive.	( )	( )	( )	( )	( )
3. I felt relaxed.	( )	( )	( )	( )	( )
*4. I felt delighted.	( )	( )	( )	( )	( )
5. I felt inspired.	( )	( )	( )	( )	( )
6. I felt fearless.	( )	( )	( )	( )	( )
*7. I felt happy.	( )	( )	( )	( )	( )
*8. I felt joyful.	( )	( )	( )	( )	( )
9. I felt excited.	( )	( )	( )	( )	( )
10. I felt proud.	( )	( )	( )	( )	( )
11. I felt at ease.	( )	( )	( )	( )	( )
*12. I felt enthusiastic.	( )	( )	( )	( )	( )
*13. I felt determined.	( )	( )	( )	( )	( )
*14. I felt interested.	( )	( )	( )	( )	( )
15. I felt confident.	( )	( )	( )	( )	( )

16. I felt able to concentrate.	( )	( )	( )	( )	( )
*17. I was thinking creatively.	( )	( )	( )	( )	( )
*18. I liked myself.	( )	( )	( )	( )	( )
19. My future looked good.	( )	( )	( )	( )	( )
20. I smiled and laughed a lot.	( )	( )	( )	( )	( )
*21. I felt peaceful.	( )	( )	( )	( )	( )
22. I was able to reach down deep into myself for comfort.	( )	( )	( )	( )	( )
23. I felt a sense of harmony with myself.	( )	( )	( )	( )	( )
24. I generally enjoyed the things I did.	( )	( )	( )	( )	( )
25. I felt lighthearted.	( )	( )	( )	( )	( )
26. I felt satisfied.	( )	( )	( )	( )	( )
*27. I felt good-natured.	( )	( )	( )	( )	( )
*28. I felt useful.	( )	( )	( )	( )	( )
29. I felt optimistic.	( )	( )	( )	( )	( )
30. I felt interested in other people.	( )	( )	( )	( )	( )
*31. I felt understood.	( )	( )	( )	( )	( )
32. I felt grateful.	( )	( )	( )	( )	( )
*33. I felt content.	( )	( )	( )	( )	( )

Source of Scale: NIH Toolbox, Salsman et al., (2014)

Appendix J: Mindfulness Scale

Day-to-Day Experiences

Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

1	Almost Always
2	Very Frequently
3	Somewhat Frequently
4	Somewhat Infrequently
5	Very Infrequently
6	Almost Never

___I could be experiencing some emotion and not be conscious of it until some time later.

___I break or spill things because of carelessness, not paying attention, or thinking of something else.

___I find it difficult to stay focused on what's happening in the present.

___I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.

___I tend not to notice feelings of physical tension or discomfort until they really grab my attention.

___I forget a person's name almost as soon as I've been told it for the first time.

___It seems I am "running on automatic," without much awareness of what I'm doing.

___I rush through activities without being really attentive to them.

___I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.

___I do jobs or tasks automatically, without being aware of what I'm doing.

___I find myself listening to someone with one ear, doing something else at the same time.

___I drive places on 'automatic pilot' and then wonder why I went there.

___I find myself preoccupied with the future or the past.

___I find myself doing things without paying attention.

___I snack without being aware that I'm eating.

MAAS Scoring

To score the scale, simply compute a mean of the 15 items. Higher scores reflect higher levels of dispositional mindfulness.

Source of Scale: Brown & Ryan (2003).

Appendix K: Session Feedback Form

Topic Importance
4. How important was this topic to you? 0 is not important and 9 is very important
0 1 2 3 4 5 6 7 8 9

5. As you discussed the topic, did you feel any strong emotions?
___Yes
___No

6. If so, please name the strongest emotion (or series of emotions) you experienced.
Emotion 1 _____
Emotion 2 _____
Emotion 3 _____

7. Compared to feeling no emotion, please rank the strongest emotion that you felt. 0 is no emotion and 9 is very emotional
0 1 2 3 4 5 6 7 8 9

8. What role did your coach play in generating your new awareness, if any?

9. Since last session and including today, did you experience a moment that you would describe as sudden insight?
___Yes
___No
___Insight gained between sessions

10. What characteristics of insight were present, if any? Check all that apply.

___at first I felt stuck	___suddenly, an idea came from nowhere	___I had an "aha" moment
___when the new idea came, I knew it "fit"	___afterward, I no longer thought the same way about the topic	___I flooded with emotion

11. If you said Yes to the experience of insight in Question 9, please describe it in your own words.(open text response)

12. At this time, how confident are you that you will attain the goal or change you desire? Thank you for your feedback. 0 is not confident and 9 is very confident
0 1 2 3 4 5 6 7 8 9

Session Feedback Survey - Coach

Session Date _____ Participant ID _____

1. In your own words, please describe briefly what awareness you forwarded or deepened during this session?

2. What was the primary type of coaching you used in this session?

a) Fulfillment b) Balance c) Process d) Mixed

3. How important would you say this topic was to the client? 0 not important and 9 very important
0 1 2 3 4 5 6 7 8 9

4. As you discussed the topic, did the client exhibit any strong emotions?
___Yes ____No
a) If so, please name the strongest emotion (or series of emotions) you witnessed.(open text)
b) Compared to feeling no emotion, please rank the strongest emotion that you observed. 0 is no emotion, 9 is very emotional
0 1 2 3 4 5 6 7 8 9

5. Since last session and including today, did you witness a moment in the client that you would describe as sudden insight?

___Yes ____No ____Insight gained between sessions

6. What characteristics of insight were present, if any? Check all that apply.
_____ at first she felt stuck
_____ suddenly, an idea seemed to come from nowhere
_____ she appeared to have an "aha" moment
_____ when the new idea came, I knew it "fit"
_____ she flooded with emotion
_____ afterward, she no longer thought the same way about the topic

7. In terms of your role, which of the following coaching attributes were present in this session (you may check up to 5 items)

(adapted from Coaching Process Inventory by Sibley, Machkirova, & Meyers, 2013)

___explored client's assumptions, beliefs or stories

___explored sub-conscious motives and operators

___encouraged choice

___explored emotions explored metaphors witnessed an energy shift

___agreed on topic for the session

___explored client's strengths and resources

___discussed overall goals

___explored immediate experience

___explored client's values

___used humour

___discussed new practices for client

___there were periods of silent reflection

___showed empathy suggested homework explored client's nonverbals

___followed up on previous homework

___provided positive reassurance

___coach redirects client to client's agenda

Thank you for your feedback.

Appendix L: Women Together Curriculum Checklist

Please indicate topic coverage over the duration of the program.
Please confirm participant attendance for each week of the program.

Please describe your experience as a life coach:
___ trained in Co-Active (Y/N) ____ certified (CPCC) (Y/N) ____ other _____
___ coaching experience (in years) ____ how many years coaching with Women Together?

Thank you.

Date Topic Topic Covered (Y/N) Attendance (Y/N)

Week 1 Group Orientation

Week 2 Personal Growth

Week 3 Health

Week 4 Personal Check-in

Week 5 Fun and Recreation

Week 6 The Gremlin Madness

Week 7 Group Growth Event

Week 8 Friends & Family

Week 9 Significant Other/Romance

Week 10 Lifestyle

Week 11 Personal Check-in

Week 12 Physical Environment

Week 13 Quantum Breakthroughs

Week 14 Group Celebration Day

Appendix M: Follow up Survey

Please review the exercise you completed in Week 1 on life satisfaction and goals below.

Based on my Wheel of Life, satisfaction score I chose to focus on:
(Please place current life satisfaction score beside area(s) of focus)

___Career
___Finance
___Physical Activity
___Romance/Significant Other
___Health
___Fun and Recreation
___Personal Growth /Spirituality
___Friends
___Other _____

GOALS

My goal related to my biggest priority:

Did your goal or priorities change through the coaching? ____ Yes ____ No
If so, please explain:

PART A

Please describe your experience with moments of insight (if any)
a) during the program b) since the program ended.

Of the behaviours that you initiated through coaching how would you rate your ability to maintain these changes?

Not at all Sometimes Usually Most of the time Always
1 2 3 4 5 6 7 8 9 10

PART B

What, if any, of the following behaviours describe you now:
(1) Not at all (2) Sometimes (3) Usually (4) Most of the Time (5) Always

Please rate the following:	1	2	3	4	5
1. I can identify my strengths	( )	( )	( )	( )	( )
2. I can identify my core values	( )	( )	( )	( )	( )
3. I know how to create SMART goals that are aligned with my values	( )	( )	( )	( )	( )
4. I can manage self-limiting beliefs/obstacles	( )	( )	( )	( )	( )
5. I can identify stressors and find ways to manage these stressors	( )	( )	( )	( )	( )
6. I can focus on the positive in pursuit of my goals	( )	( )	( )	( )	( )
7. I can choose new perspectives when I am stuck	( )	( )	( )	( )	( )
8. I am aware of my thoughts and feelings	( )	( )	( )	( )	( )
9. I can speak authentically about my experience of a situation	( )	( )	( )	( )	( )
10. I dare to dream and be supported by others	( )	( )	( )	( )	( )

Appendix N Permissions for Copyrighted Material

NIH Toolbox
Assessment of Neurological and Behavioral Function

July 24, 2015

Ms. Tracy Robinson
MSc Candidate, Health Promotion
Health and Rehabilitation Sciences
[redacted]

Dear Ms. Robinson,

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NIH Toolbox
Assessment of Neurological and Behavioral Function

translations and should be your point of contact and reference going forward. Please direct all inquiries either to Cindy Nowinski, MD, PhD at [redacted]

Kindly signify your consent and agreement to the foregoing by signing and dating this letter agreement and returning it to the above identified individuals. This letter agreement shall be of no force and effect unless and until so executed and returned by you.

We wish you every success in your effort, and thank you for your interest in Toolbox.

[redacted]

Cindy J. Nowinski, MD, PhD
Scientific Director – NIH Toolbox

CONSENTED AND AGREED:

[redacted]

Name: [redacted]

Date: 10-Sep-15

[redacted]

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# of Illustrations:	1
ISBN of Edition:	9781400068548

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For use in a graduate thesis on insight. Figure to be re-drawn with text boxes instead of graphics used but with same categories for phases of insight. Source would be cited in figure and in references.

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Re: Mixed methods book

Jun 28

Hello Tracy:

You have my permission to do so.

Warm regards,
Dr. Watkins

Daphne C. Watkins, PhD
Associate Professor, University of Michigan
School of Social Work and School of Medicine, Department of Psychiatry
XXX-XXX-XXXX [phone] XXX-XXX-XXXX [fax]
****
Check out my book, *Mixed Methods Research* (2015, Oxford University Press).
****

On Tue, Jun 28, 2016 at 10:20 AM, Tracy Robinson wrote:
Dr. Watkins,
Thank you so much for the book you authored with Deborah Gioia on Mixed Methods Research. I love the pragmatism of MMR and the fervent belief that QUAL and QUAN can live in harmony in a study design. I chose to use convergent parallel design in my graduate thesis and I am writing to ask permission to duplicate and reference the diagram used in your book that explains the phases of convergent parallel design during data collection and analysis.
warm regards,
Tracy Robinson, MSc (Candidate)

Curriculum Vitae

Tracy (Trae) Robinson

Education

2016 Masters of Science, Health and Rehabilitation, Western University (candidate)
2016 Certificate in University Teaching and Learning (in progress)
2015 Professional Co-Active Coach
2009 Organizational Learning and Development, Fanshawe College, Ontario
1994 Honours Bachelor of Art, Communication Studies, University of Windsor, Ontario

Recognition

2015 Diane Y Stewart Scholarship, London Health Sciences Centre, Ontario
2014 Staff Impact Award, Nominee, Lawson Health Research Institute, Ontario
2008 Alan Thomas Fellowship, Short List, Carold Institute, Ontario

Publications

Clarson CL, Brown H, De Jesus S, Jackman M, Mahmud FH, Prapavessis H, **Robinson T**, Shoemaker K, Watson M, Wilson AJ, Hill DJ. Effects of a Comprehensive, Intensive Lifestyle Intervention Combined with Metformin Extended Release in Obese Adolescents. *ISRN Obesity*, 2014 Sep.

Bock DE, **Robinson T**, Seabrook JA, Rombeek M, Norozi K, Filler G, Rauch R, Clarson C. HIP Kids: Effects of a 1-year, multidisciplinary, lifestyle intervention on adiposity and quality of life in obese children and adolescents. *BMC Pediatrics*, 2014 Aug

Spaic T, Mahon JL, Hramiak I, Byers N, Evans K, **Robinson T**, Lawson ML, Malcolm J, Goldbloom EB, Clarson CL. Multicentre randomized controlled trial of structured transition on diabetes care management compared to standard diabetes care in adolescents and young adults with type 1 diabetes (Transition Trial). *BMC Pediatrics* 13:163. doi: 10.1186

Rauch R, Welisch E, Lansdell N, Burrill E, Jones J, **Robinson T**, Bock D, Clarson C, Filler G, Norozi K. Non-invasive measurement of cardiac output in obese children and adolescents: comparison of electrical cardiometry and transthoracic Doppler echocardiography. *Journal of Clincial Monitoring and Computing*. 2012 Nov: 10877-012:9412-7.

Rauch R, Veilleux LN, Rauch F, Bock D, Welisch E, Filler G, **Robinson T**, Burrill E, Norozi K. Muscle force and power in obese and overweight children. *J Musculoskelet Neuronal Interact*. 2012 Jun;12(2):80-3

Wilson JA, Prapavessis H, Jung ME, Cramp AG, Vascotto J, Lenhardt L, Shoemaker K, Watson M, **Robinson T**, Clarson CL. Lifestyle Modification and Metformin as Long-term Treatment Options for Obese Adolescents: Study Protocol. *BMC Public Health* 2009, 9:434
doi: 10.1186/1471-2458-9-434

Published Abstracts

Rashmi Nedadur, Cheril Clarson, Selam Mequanint, Tracy Robinson,Tamara Spaic. Clinical Care in Young Adults with Type 1 Diabetes After Transition to Adult Care. *Canadian Journal of Diabetes* , Volume 38 , Issue 5 , S46 doi: http://dx.doi.org/10.1016/j.jcjd.2014.07.126

Bock D, **Robinson T**, Seabrook J, Clarson CL. HIP Kids: A Multidisciplinary Outpatient Health Initiative Program to Treat Child and Youth Overweight and Obesity. *Can J Diabetes* 2013; 37 S263.

Bock D, **Robinson T**, Seabrook J, Clarson CL. Health Initiative Program for Child and Youth Overweight and Obesity (HIP Kids). Results of the first two enrolment waves. *Paediatr Child Health* 2011; 16 (Suppl A):18A.

Poster Presentations

Robinson, T. and Morrow, D. Linking Insight To Behaviour Change In A Life Coaching Intervention For Women, (accepted) Coaching in Leadership & Healthcare 2016, Sep 16-17, 2016, Boston, MS

Watson M, Dowd AJ, Hill DJ, Prapavessis H, **Robinson T**, Shoemaker K, Clarson CL. Effects of Comprehensive, Intensive Lifestyle Intervention Combined with Metformin Extended Release in Obese Adolescents. *5th Conference on Recent Advances in the Prevention and Management of Childhood and Adolescent Obesity*, Winnipeg, MB
Sep 2014.

Presentations

Le Ber, M and **Robinson, T.** Organizational Culture and Leadership: Exploring the Practice of Leadership in a Women's Circle, (accepted*) International Leadership Association (ILA) Conference*, Nov 2-5, 2016, Atlanta, GA.

Rashmi Nedadur, Cheril Clarson, Selam Mequanint, **Tracy Robinson**,Tamara Spaic. Diabetes Care in Young Adults with Type 1 Diabetes after Transition to Adult Care *International Society for Pediatric and Adolescent Diabetes(ISPAD*), Sep 3-6, 2014, Toronto, ON.

Rashmi Nedadur, Cheril Clarson, Selam Mequanint, **Tracy Robinson**, Tamara Spaic. Diabetes Care in Young Adults with Type 1 Diabetes after Transition to Adult Care *ICE/ENDO 2014*, June 21-24, Chicago, Il. (Winner Helmsley Charitable Trust Abstract Awards in Type 1 Diabetes)

Bock D, **Robinson T**, Seabrook J, Clarson C. HIP Kids: Health Initiative Program for Child and Youth Overweight and Obesity. *3rd Canadian Obesity Summit*, May 2013, Vancouver, BC.

Bock D, **Robinson T**, Seabrook J, Clarson CL. Health Initiative Program for Child and Youth Overweight and Obesity (HIP Kids). Results of the first two enrollment waves. *Canadian Paediatric Society 88th Annual Conference*, June 2011, Quebec City, QC.

Bock DE, **Robinson T**, Clarson CL. HIP Kids, Health Initiative Program for Child and Youth Overweight and Obesity. Preliminary Results of the first two enrollment waves. *Presentation Global Congress for Consensus in Pediatrics & Child Health*, February 2011, Paris, France.

Robinson T, Bock D, Gerber J, Jackman M, Clarson CL. HIP Kids, Health Initiative Program for Child and Youth Overweight and Obesity. 3rd Conference on Recent *Advances in the Prevention and Treatment of Childhood & Adolescent Obesity, October 2010*, Hamilton, ON.

Robinson T, Bock DE, Jackman M, Kaipainen J, Vascotto J, Clarson CL. HIP Kids, Health Initiative for Child and Youth Overweight and Obesity. Oral Presentation *Canadian Obesity Network Student Meeting*. June 2010, Ottawa, ON.

Volunteer and Community Service

2015 Circle Council, The Circle Women's Centre, Brescia University College (5 yrs)
2009 Chair, Red Tent, The Circle Women's Centre, Brescia UC (6 yrs)
2008 Greendrinks and Greening of the Festivals, London, Ontario (2 yrs)
2007 Workshop Facilitator, Women's Community House
2007 Innovation Award Committee, Pillar Nonprofit Network
2006 Needs Assessment Study, London Food Coop
2005 Board of Directors, Children's Talent Education Centre
2004 Mentor, Katimavik