Calmly coping: A Motivational Interviewing Via Co-Active Life Coaching (MI-VIA-CALC) pilot intervention for university students with perceived levels of high stress

Rebecca R. Fried[1,2] and Jennifer D. Irwin[1,2]

[1]Health & Rehabilitation Sciences, Western University, London, Ontario.
[2]Faculty of Health Sciences Health Promotion Research Laboratory, Western University, London, Ontario

Email Contact: jenirwin@uwo.ca

Abstract

Stress is a campus problem. This pre-post pilot study assessed the impact of Motivational Interviewing via Co-Active Life Coaching (MI-via-CALC) on the stress management of 30 full-time, English-speaking Canadian undergraduate students, aged 17-24 years. Participants were assessed using the Perceived Stress Scale and Hospital Anxiety and Depression Scale at pre-, mid-, and post-intervention. Three one-way, repeated-measures ANOVAs were completed. Statistically significant differences in stress reduction were found between pre-intervention to mid-intervention and between pre-intervention to post-intervention. No statistically significant differences occurred between mid- to post-intervention. Inductive content analysis of qualitative interviews at pre-, mid-, and post-intervention revealed participants' positive experiences.

Key words*:* Co-Active life coaching, Motivational Interviewing, MI-via-CALC, Stress, University Students

Introduction

In 1939, the British government created the war propaganda slogan of *keep calm and carry on* (Lewis, 2004). In the past several years, this phrase has become inherently popular and can be seen in a plethora of memes on various social media platforms. The saying has had a large resurgence, not only in its original wording, but also in numerous variations such as, *keep calm and study*, and *keep calm and party*, to name but a few (Lewis, 2004). In today's technologically, quick-fix-driven world where people fall victim to living life as a juggling act (Goodman, 2014) – trying to find a healthy work-life balance – it begs the question: Can people really *keep calm and carry on*? Currently, a hot-topic issue in the media and health is mental health, with a specific focus on youth, including university students (Canadian Institute For Health Information, 2015; The Canadian Journalism Forum on Violence and Trauma, 2014; Centre For Addiction

And Mental Health [CAMH], 2015; Leon, Cloutier, Bélair, & Cappelli, 2014; Schwartz & Kay, 2009)[1]. Conventionally, student mental health has been understood with regard to the adaptability challenges faced when commencing higher education (Byrd & McKinney, 2012). College-related mental health problems have increased in complexity, as well as in severity and volume (Byrd & McKinney, 2012). Whether students are away from home for the first time, are having a hard time managing classes, are struggling to make time for social activities, and/or are working to maintain a proper diet and exercise, university brings forth an array of challenges that can affect how students perform academically (Hammer, Grigsby, & Woods, 1998). University is often described and experienced as a competitive place, where students 'battle it out' to see who can be better, faster, smarter, and stronger (Schiffner, 2010) and attain the highest grade point average, in hopes of earning scholarships and jobs (Travis, 2011). With so much pressure placed on students, the mental health of this population can be impacted, resulting in difficulty managing high levels of stress, specifically distress (i.e. negatively experienced stress[2]), which affects many aspects of a person's health (Dougall & Baum, 2003). Specifically, excess levels of stress have been linked to suppression of the immune system and acquiring the common cold, among other more deleterious health issues (Passer, Smith, Atkinson, Mitchell, & Muir, 2008). Consequently, it is imperative that the mental health of university students be studied, such that new and innovative approaches can be utilized to help individuals cope (Hunt & Eisenberg, 2010).

Globally, there has been a rise in rates of mental health/illness (Whiteford et al., 2013). Not only have rates of mental illness increased globally, but these rates are on the rise in North America. For instance, American researchers have illustrated that approximately 88% of university students report feeling either moderate or serious stress, and are most affected by stressors related to academics (Dixon & Kurpius, 2008). Further, a Canadian Campus Survey concluded that 47% of Canadian university students felt constantly under strain (Adlaf, Demers, & Gliksman, 2005). Further still, Ontario university students reported that the experience of mental distress significantly impacts their lives (American College Health Association [ACHA], 2009; 2013), of which 51% to 60% of students reported feeling hopeless; 33% to 43% revealed they felt so depressed they were not able to function; and 6% to 9% indicated that they had seriously considered suicide within the last 12 months (ACHA, 2009). In 2013, the ACHA reported that 56% of students at a southwestern Ontario university (i.e. the host institution for this study) rated their overall stress levels as 'more than average' or 'tremendous' within the past 12 months; 33% of students reported that their academic performance was affected by stress; and 27% reported that their academic performance was impacted by anxiety (ACHA, 2013).

Although stress was the main focus of the current study, it was important to address the fact that stress is only one component of mental health. Mental health is defined as a continuum (Mental Health Commission of Canada, 2015), and thus, it is important to recognize the other elements of mental health. For example, stress is highly correlated with depression (Magalhaes et al., 2010). The most likely age group to have major depression is 15 to 24 (Blazer, Kessler, McGonangle, & Swartz, 1994); the typical age range of undergraduate students (Statistics Canada, 2010). The 2001 National College Health Assessment reported that during the year 2000, 76% of students felt 'overwhelmed', and 22% were unable to function as a result of feeling depressed (ACHA, 2001). Instead of seeking appropriate mental health help, some students turn to detrimental behaviors. For example, researchers in the United States found that 22% to 25% of college students have abused Adderall®, a medication used to treat attention-deficit/hyperactivity

[1] NB: The United States refers to university as college. Thus, college and university may be used interchangeably. A Canadian college is equivalent to community college in the United States. Distinctions will be made when necessary.
[2] When the term 'stress' is used, people are often referring to 'distress'. Thus, these terms are used interchangeably.

disorder (Food and Drug Administration, 2011), and deemed by some as the 'only-way-to-do-homework drug' (McCabe, Knight, Teter, & Weschler, 2005). McGill University (2011) posted survey results indicating that 5.4% of students, out of 400, had used drugs as a cognitive enhancer. In another study, up to 11% of post-secondary students used Adderall® and other drugs as study aids (Chang, 2013). According to the ACHA (2013), 9% of students at the study's host institution admitted to using drugs that were not prescribed to them (4% of which were stimulants); and within a 12-month period, reported the following: (a) 51.1% felt things were hopeless; (b) 86.4% felt overwhelmed by all of the things they had to do; (c) 84.3% felt exhausted (not from physical activity); and (d) 56.1% felt overwhelming anxiety. Further, there has been "exponential growth in the demand" (Travis, 2011, para 4) for services at this specific university's campus. There has been a 20% increase in the number of students requesting counseling in the past two years, resulting in a waitlist of more than 100 students, and a wait time of about three months. Thus, with rates of mental illness rising, in addition to some of the dangerous associated coping mechanisms, it is evident that an innovative approach to dealing with stress among the university population is critical.

MI-via-CALC

One approach that has demonstrated efficacy in previous unrelated studies is motivational interviewing (MI; Miller & Rollnick, 2002) applied via Co-Active Life Coaching (CALC; Kimsey-House, Kimsey-House, Sandahl, & Whitworth, 2011). MI is "a directive, client-centered counseling style for eliciting behavior change" (Miller & Rollnick, 2002, p. 325). With specific regard to stress, researchers have found positive results indicating MI is a useful tool to manage anxiety (a manifestation of stress; Westra, 2012). MI is a well-supported treatment in the area of substance abuse (Hettema, Steele, & Miller, 2005). MI focuses on a client's ambivalence to change and MI has been used successfully to improve treatment adherence in anxiety disorders (Westra & Dozois, 2006).

Although it is theoretically sound and has demonstrated positive results in numerous studies, it is important to recognize that MI is often criticized for the challenge of converting its tenets into practice, as well as having inconsistent training approaches and usage (Hettema et al., 2005; Mantler et al., 2013; Mesters, 2009) – all of which have resulted in unpredictable degrees of MI's success. It is essential that a standardized application of MI be used to ensure reliability and adherence with MI principles. In this regard, Newnham-Kanas, Irwin, and Morrow (2010) concluded that CALC contains all the tenets of MI, while coincidently having specific tools to put those tenets into action. Additionally, CALC overcomes MI's variable training requirements, due to the fact that certified CALC providers engage in the same training program (five, three-day training courses, equating to approximately 100 hours, followed by a 25-week certification program) and concrete skills to facilitate the consistent implementation of core principles (Kimsey-House et al., 2011). Although CALC is considered atheoretical and was founded on practice, it is supported by health behavior change theories (e.g. social cognitive theory [Bandura, 1986], theory of reasoned action [Fishbein & Ajzen, 1975], theory of planned behavior [Ajzen, 1988], and self-determination theory [Deci & Ryan, 2002]), which, in addition to a growing number of research studies evaluating its impact on a variety of health behaviors, help to position CALC as a suitable health intervention (Irwin & Morrow, 2005; Mantler, Irwin, & Morrow, 2010, 2013; Newnham-Kanas et al., 2008, 2011; Newnham-Kanas, Irwin, Morrow, & Battram, 2011; Pearson, Irwin, Morrow, & Hall, 2012; Pearson, Irwin, Morrow, Battram, & Melling, 2013; Pearson, Irwin, & Morrow, 2013; van Zandvoort, Irwin, & Morrow, 2008, 2009). Therefore, MI-via-CALC is defined as the application of MI tenets using CALC tools. It is a theoretically-grounded, collaborative type of coaching wherein the coach and client are seen as equals who function as a team to resolve issues upon which the client chooses to focus.

In the above-referenced studies, albeit rather different in nature, participants reported MI-via-CALC helped with stress, and these feelings were mirrored through increases in self-esteem and self-efficacy, concepts related to stress (Abouserie, 1994; Lyrakos, 2012; Zimmerman, 2000). It is important to note that in the literature, coaching has demonstrated its utility as a medium for stress reduction (Newnham-Kanas, Gorczysnki, Morrow, & Irwin, 2009). Newnham-Kanas et al. (2009) developed an annotated bibliography that addressed (life) coaching and health research. One of the conclusions of the bibliography was the efficacy of coaching as a method for stress (Newnham-Kanas et al., 2009). However, one of the limitations noted in the bibliography was that of the inconsistence coaching approaches and methodology (i.e. not all coaching studies utilized the same methods and/or type of coaching). Therefore, CALC was chosen in an effort to uphold rigor, as well as building on the fact that CALC (i.e. MI-via-CALC) has an evidence-base. That said, to date no study has specifically examined, as its primary outcome, the potential for MI-via-CALC as a stress management/reduction tool.

The purpose of this pilot study was to examine the impact of an MI-via-CALC intervention on the stress management experiences of full-time, undergraduate students from an Ontario university. Ethical approval was granted by the Office of Research Ethics at the host university, and a letter of information and consent form were given to all participants to read and sign before the collection of any data occurred. Qualitative and quantitative data were collected to address the study's purpose statement. The quantitative data was utilized to identify statistically significant results and the qualitative data acted as a first-hand experience of the study from the perspective of the participants. The qualitative data also functioned as a way to further understand the quantitative data[3]. Additionally, because this was a pilot study with no control group, it was imperative that all manners of data were gathered to comprehensively address the research study's purpose statement.

Methods

Participants

All full-time undergraduate students at the host institution were invited to participate in the pilot study, via a mass e-mail. The first 30 who met the inclusion criteria were invited to become the study participants. Using power calculation software (Lee, 2013), it was estimated that a sample of 20 participants would be sufficient to detect a moderate effect ($r^2 = .12$) of a three-level within-subject independent variable more than 80% of the time, using an alpha of .05. The inclusion criteria consisted of: being between the ages of 17-24; full-time enrollment; English-speaking; not receiving therapy/counseling or taking medications for stress/anxiety/mood disorders; and self-identifying as having above normal levels of stress (i.e. interfering with daily life and choosing 5 or greater when asked to rate their current level of stress from 1-10). Participants were required to meet with one of the researchers (RF) to confirm, in person, the email-performed screening, complete pre-intervention assessments, and a demographic questionnaire. Six participants dropped out for various reasons, prior to completing the intervention. The primary reasons given for dropping out were due to conflicting time commitments and a family emergency. The final sample included 24 participants (Table 1).

[3] It is important to recognize that qualitative methods were used for this study (e.g. semi-structured interviews) as opposed to qualitative methodology (i.e. a theory of thought, such as grounded theory, was not utilized and/or applied to this study and its results).

Participant Characteristic	*N*	%	Mean	Mode	SD
Sex					
Male	9	30			
Female	21	70			
Age (15-24 years)					
18	4	13			
19	4	13			
20	13	43			
21	6	20	20.13	20	1.46
22	1	3			
23	0	0			
24	2	7			
Year of enrollment					
1st	6	20			
2nd	6	20			
3rd	12	40	2.63	3	1.09
4th	5	17			
5th	1	3			
Number of courses (≥3)					
3	1	3			
4	2	7	4.93	5	0.52
5	25	83			
6	2	7			
Self-reported level of stress (1-10)					
1	0	0			
2	0	0			
3	0	0			
4	0	0			
5	2	7			
6	4	13			
7	8	27	7.35	7	1.09
7.5	4	13			
8	7	23			
8.5	1	3			
9	4	13			
10	0	0			

Table 1 - Demographic Information

All coaches ($N = 13$) were volunteers, had no affiliation with the study or research team, and were recruited via an electronic post on the Co-Active Coaches Network. Coaches were all Certified Professional Co-Active Coaches (CPCC) and were asked to use only their CPCC skills throughout the study. The

researchers screened all interested coaches, with local coaches (i.e. Ontario, Canada) being preferred to help ensure they were familiar with the local environment including information that might be brought up during the coaching sessions. The researchers spoke with each volunteer coach to ensure they had no personal experiences with stress that would prevent them from fulfilling their CPCC role. Participants were randomly matched with coaches on a first-come, first-serve basis. This was done until all participants were assigned a coach. Participants were given the email and phone number of the coach and were informed that it was their responsibility to contact the coach.

Procedure

This eight-session pilot study, that ran from January 2014 to May 2014, used a pre-post, repeated-measures design (with participants acting as their own control), with data collection at three time points: pre-intervention (before the coaching sessions); mid-intervention (after four sessions); and post-intervention (immediately after the eighth session). Participants were to receive eight, 30-40 minute telephone-based sessions with a CPCC. However, four participants used Skype due to running out of minutes on their phones and/or long-distance fees. One participant had one session in person and did the rest by phone, while another had four sessions in person, and completed the rest by phone. Two participants had only six sessions. The researchers learned some sessions were longer than 30-40 minutes (i.e. one hour), and instead of having eight sessions, six were had in order to honor the study guidelines. To adhere to the CALC approach (Whitworth et al., 2007) all sessions were kept confidential. The researchers were privy only to information that was willingly shared by the participants during the semi-structured interviews.

Semi-structured interviews

Individual semi-structured interviews were conducted to explore participants' experiences of the intervention. Prior to conducting the interviews, *honesty demands*, which help to diminish social desirability, were used (Bates, 1992). Participants were asked to answer as honestly as possible and told there were no right or wrong answers, nor were there certain answers the researchers hoped to hear/not hear. Interview questions underwent pilot testing with a sample from the target population to ensure they were appropriate and suitable for the study. All interviews were audio-recorded and transcribed verbatim.

Measures

Perceived Stress Scale-10 (PSS-10)

Participants completed the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermeistein, 1983; Cohen & Williamson, 1988), a validated and reliable scale that is considered the most widely used psychological instrument for measuring stress (Cohen et al., 1983; Cohen, 2000). The PSS-10 assesses the amount of stress in a person's life rather than the response to a specific stressor, and questions pertain to thoughts and feelings within the last month (Cohen, 2000). It is represented as a 10-item Likert-scale (anchored by never and very often) ranging from zero to four, in which items are reverse-scored for the positively stated items (items 4, 5, 7, and 8; Cohen, 2000). The scale yields a single score after summing all of the items on the questionnaire, and a higher score is indicative of greater levels of perceived stress (Cohen, 2000).

Hospital Anxiety and Depression Scale (HADS)

Participants completed the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983), "a self-rated screening questionnaire detecting mild degrees of anxiety and depression" (Preedy & Watson, 2009, p. 4227). It uses a four-point Likert-scale (zero to three) with 14 items – seven for anxiety (HADS-A) and seven for depression (HADS-D; Preedy & Watson, 2009; Zigmond & Snaith, 1983). A

participant may score between 0-21 for each scale. Although it was intended for general medical hospital outpatients, it has been widely used in primary care settings (Preedy & Watson, 2009). Researchers have emphasized the connections among stress, anxiety, and depression; thus, it was important to utilize a scale that measures anxiety and depression, not just stress. The HADS does not detect serious mental illnesses (Bjelland, Dahl, Haug, & Neckelmann, 2002), which was appropriate for this study.

Quantitative Data Analysis

Using IBM SPSS (version 21.0) descriptive statistics were run on all quantitative data. To determine statistical significance, three one-way, repeated-measures ANOVAs were completed with an alpha of 0.05. One ANOVA was done to assess the scores from the PSS, while separate ANOVAs were done for the anxiety and depression components of the HADS. A Bonferonni correction was applied to control for Type I Error.

Measure	Description
Credibility	Member checking was done between each question and at the end of each interview to ensure the researchers correctly understood participants' responses.
Confirmability	The researcher and research assistant (RB) independently performed inductive content analysis on interview transcriptions, and compared their analyses. Data was examined for similarities and differences across the transcriptions. Common emergent themes were identified. A summary of the analysis was prepared and discussed.
Dependability	Research team members debriefed and summarized findings. Findings were discussed to ensure analyses were not influenced by researcher bias.
Transferability	The research process was documented, enabling potentially interested parties with the ability to determine whether the study results are transferable to other settings.

Note. Based on Guba and Lincoln (1989); adapted from Irwin, He, Bouck, Tucker, and Pollett (2005).

Table 2 - Quality Assurance Steps Followed for Data Collection and Analysis

Qualitative Data Analysis

To gain an in-depth understanding of participants' perspectives of the coaching, inductive content analysis, as described by Patton (2002), was utilized to analyze interview transcripts. That is, common emergent themes expressed by the participants were identified, rather than attempting to fit the data into predetermined categories. Quality assurance steps to help ensure data trustworthiness, as suggested by Guba and Lincoln (1989), were utilized throughout data collection and analysis (Table 2).

Results

PSS

Over time, there was a statistically significant and desirable difference with regard to participants' perceived levels of stress [$F(2, 46) = 28.49$, $p < .05$]. There was a statistically significant and positive difference from pre-intervention ($M = 25.21$, $SD = 5.69$) to mid-intervention ($M = 16.92$, $SD = 5.57$), and from pre-intervention to post-intervention ($M = 15.92$, $SD = 7.19$). There were no statistically significant differences between mid-intervention to post-intervention.

HADS: Anxiety Scale

Over time, there was a statistically significant and desirable difference with regard to participants' perceived levels of anxiety [$F(2, 46) = 16.09$, $p < .05$]. There was a statistically significant difference from pre-intervention ($M = 12.04$, $SD = 2.99$) to mid-intervention ($M = 9.20$, $SD = 3.12$), and from pre-intervention to post-intervention ($M = 7.79$, $SD = 3.87$). No statistically significant differences were found between mid-intervention and post-intervention.

HADS: Depression Scale

Over time, there was a statistically significant and desirable difference with regard to participants' perceived levels of depression [$F(2, 46) = 9.30$, $p < .05$]. There was a statistically significant difference from pre-intervention ($M = 6.54$, $SD = 3.52$) to mid-intervention ($M = 4.87$, $SD = 2.43$), and from pre-intervention to post-intervention ($M = 3.70$, $SD = 2.78$). No statistically significant differences were found between mid-intervention and post-intervention.

Qualitative Findings From Participants

Pre-Intervention

At baseline, participants were asked about their current level of stress, the impact of stress on daily life, and what they hoped to gain from the coaching. The following themes emerged: (1) above normal stress levels; (2) health; (3) worry; (4) balance; (5) procrastination; and (6) self-awareness and coping (Table 3). With regard to the noted themes, when asked about their current level of stress, all participants described feeling high levels of stress that they perceived to be above normal, such that it was having a negative impact on daily life. Participants described stress as having a negative impact on their health, some explaining physiological health issues related to sleeping, eating, and physical activity, while other participants discussed mental health issues. All participants described feeling worried about all of the things they had to do, and constantly thinking about too many things. The majority of participants described not having a sufficient work-life balance. Most participants discussed feeling so stressed and having so much to do that instead of being motivated to complete their tasks, they instead procrastinated on a regular basis. When asked what would be different if the coaching sessions were effective, all participants expressed a desire to gain increased self-awareness pertaining to their reactions to stressors; as well as a desire to learn coping strategies to alleviate stress.

Above normal stress
"I think I'm stressed all the time about everything…if I had to put it on a scale of 0-10, I would say I'm stressed between 8-10."
"I feel very stressed all the time, and I feel like I can't control it. I try to, and my Mom's always like, you can't be that stressed…I try to not be stressed, but I feel like it's taking over me, and it makes me not able to do the things I want to do."
Health
"It [stress] affects my sleeping habits and…because of that, it also affects my eating habits…sometimes I get too tired, so I have to go take a nap, and then I nap through a really important time…"
"It's more of the butterflies, something's just unsettling and I don't feel comfortable in my own mind, or being. Like, I just have a tummy-ache…"
Worry
"It's always weighing on the back of my mind."
"I'll constantly worry about the things I have to do, and worry about whether or not I'll finish them or not. And whether I'll be efficient enough to finish all of them in one day, or whether I might, my performance will be good enough…"
Balance
"I've lost sleep and I've also lost interest in my friends and things like that, because I feel like I need to focus on my schoolwork."
"A lot of the times I can't…sit down and read a book just for fun. Watching TV is almost impossible because I feel like I should be, like not reading for fun, like reading for school. Yeah, super guilty when I pick up a book, I'm like, this isn't a textbook. Or going out with friends, a lot of the time I just tell them I can't cause I'm really busy…Maybe if I do more work ahead of time I could've gone out, but I never feel like I can."
Procrastination
"…It impedes what I do. I procrastinate and don't get all of my work done. I just build it up in my head…Just procrastinating and not getting on with things that I should do."
"…It's almost like I'm so stressed about things that I just don't do them, because I want to forget about them…cause I don't want to be stressed. So, I'll just put it off, like throw, like sweep everything under the rug."
Self-awareness and coping strategies *(if study were deemed successful)*
"I'd feel like I would have a bit more control over my mind again [and] being a bit more self-aware… And trusting myself with it, and having conversations with the coach that support the feelings of myself…Self-esteem and confidence in my own mind…Yeah, self-awareness. Just knowing more about myself…and why did I act the way I did, and…just to find out where my mind really is."
"I think it'd be helpful to know when I'm in a stressful situation, how to sort of take myself out of that, and like calm myself down. And how to get out of it as well."

Table 3 - Quotations Supporting Themes at Pre-intervention

Mid-Intervention and Post-Intervention

Participants were asked several questions pertaining to their current level of stress, the impact of stress on daily life, and what differences were apparent since beginning the intervention, as well as their overall experiences with the coaching. The themes for both mid- and post-intervention were the same. This is further corroborated by the fact that there were no statistically significant differences between mid- and post-intervention among the quantitative data. Thus, the common themes will be presented in aggregate form to avoid repetition. The common themes were: (1) decreased and more manageable levels of stress; (2) perspectives; (3) increased self-awareness; (4) self-reliance; and (5) perspectives on coaching. Although

the themes themselves were the same, the magnitude of sentiments within each theme varied by time point and as such, Tables 4 and 5 will present quotations for these themes at the mid- and post-intervention time points, respectively. With respect to the noted themes, at both time periods, the majority of participants reported having lower levels of stress than the previous time point. Some participants felt that their levels of stress were not necessarily lower, but that they were able to better manage their stress. All participants noted being able to view their stress from a different perspective, which helped their coping and stress management. Furthermore, all participants described that they had a better sense of their stressors and how they felt when they were stressed. Most participants mentioned that a positive attribute of the coaching sessions was that the coach was not forceful and did not give advice; rather, the coach acted as a guide and the answers/solutions came from the participants. All participants expressed that the coaching sessions were a positive experience, and were something to which they looked forward.

Decreased and more manageable levels of stress
"I'm able to sort of slowly ease my way through…relax myself and sort of wind myself down…it's almost like I have more control over it [stress]."
"I'd describe it [my stress] as manageable. The things that used to upset me very easily, I'm now able to take a breath or look at it instead of immediately getting upset."
Perspectives
"I see it [stress] more…like a road sign telling me where I am right now."
"I've learned through coaching to live in the now instead of living in the future, instead of worrying about something that's gonna happen in one or two months, just living in the moment and kinda stick to that… [my coach] helped me learn to deal with stress in a different way. Usually, I'm very one-minded on how to do one thing…and [my coach] taught me that there's different ways to do things."
Increased self-awareness
"I can better understand myself, in terms of my stress, and…my emotional level and things like that."
"I've learned quite a few things, quite a few different ways to re-focus myself and realize what I need to do on a daily basis in order to have stress be positive. …I know more about what makes me happy and what motivates me so that I can do more of those things on a daily basis."
Self-reliance
"The coach was helping me form my own conclusions…helping me realize that all the answers, I already have…helping me ask questions that help me discover them. I thought that was a very neat approach and it's very interesting in a fun way to discover myself as well."
"…[My coach is] good at listening to everything and making you focus in on…how do you think this affects you and, [my coach will] bring it back to you. And you're the one, [my coach is] like a guide in solving your own problems. Which is really good because it makes you realize that you do have all of the answers at the end of the day, and you shouldn't feel so overwhelmed with everything in your life because, you know there are other options and other ideas, and perceptions to how you view your problems."
Perspectives on coaching
"It's very...open. I know [my coach] has my best interest in mind and genuinely wants to help me deal with stress, and get through problems or issues that I feel are really big but then [my coach] kind of brings them down to size, and then I don't feel like they're impossible to get over… the comfort level is there. I know that [my coach] won't judge me if I start discussing something that bothers me or stresses me out."
"I feel like my coach really inspires me to kind of find myself…it's a really good experience in my opinion."

Table 4 - Quotations Supporting Themes at Mid-Intervention

Decreased and more manageable levels of stress
"I would say it's [my level of stress] not too bad, especially with exams coming up. I've learned how to deal with what I have to do, so I'm not as stressed as I normally am…I'm just really happy that it's more manageable than it used to be."
"…I found quite a big difference in terms of…just recently, I have a lot of projects, and exams, and things like that. And I felt like…I'm pretty sure it's a result of the coaching."
Perspectives
"[The coaching sessions] gave me time away from my schoolwork to reflect and figure out what was going right, what was going wrong…I completely changed my perspective so that I wasn't giving myself more stress, I was breaking it down, doing smaller things, and that way avoided the whole overwhelming breakdown, so, that was probably the best and most efficient thing that worked."
"…The coaching definitely gave me a lot of mechanisms and ways to look at the situation so that I don't stress myself out."
Increased self-awareness
"…Realizing that I'm stressed and where the stress is coming from…I think by me being able to identify where the stress is in my life, it's easier for me to control and reduce that stress."
"The study has shown me that stress is temporary and that yes, it's gonna be tough, but really, it's shown me the value of social support of being able to talk to someone, and really kind of see, and be more self-aware of how I'm handling stress or not handling stress well. I'm still having trouble with stress, but I'm definitely more aware of it. I'm definitely working towards…being more in control as I'm more able to feel it coming on. I guess an overall more self-awareness towards stress."
Self-reliance
"It was fun to have the challenge [of coming up with my own answers and topics] because after all, it is my decision to go…in any direction that I wanted. I guess it was fun…to set the goal for each call."
"They [the coach] need to make you figure it out for yourself…After each session I'm always thankful for that aspect of it because now that the coaching is over, I have those tools and they're mine…it's not something that someone told me and I wrote down…I came up with them myself, I figured out what works best for me, and I think I like that model because it's not like therapy where you're kind of dependent upon the session."
Perspectives on coaching
"I think that we just developed a really good bond, and that was really pivotal for me to open up and really give myself to it, to get the best result."
"I loved it…it was fun getting involved in it, the whole experience…Always at the very end of the session…I come out with a really good feeling about having discussed everything."

Table 5 - Quotations Supporting Themes at Post-Intervention

Discussion

The primary finding from this pilot study was that of improvements in stress and stress management over time, both quantitatively and qualitatively. During semi-structured interviews at both mid- and post-intervention, the same themes were brought up by the participants, verifying that only minor changes occurred between the fourth and final coaching sessions. Evidently, the biggest changes occurred during the initial coaching sessions until the middle of the intervention, and were maintained until the end of the sessions.

Similar findings to the current study have been apparent in other MI-via-CALC research where participants quantitatively displayed a positive change over time, as well as displaying consistent qualitative themes about improved stress management between two different time-periods. For instance, in Mantler et al.'s (2010) smoking cessation study, participants demonstrated a positive shift in levels of stress, which was illustrated by increases in self-esteem and self-efficacy, which are constructs reflecting experiences of stress (Abouserie, 1994; Lyrakos, 2012; Zimmerman, 2000). Qualitatively, participants also noted a greater sense of self-awareness, as well as noting the acquisition of coping skills for stress, which was reported as the main trigger for smoking (Mantler et al., 2010). Previous MI-via-CALC studies have resulted in positive improvements in participants' stress experiences, where stress was seen as a core issue for other health behavior challenges (Newnham-Kanas et al., 2008; Newnham-Kanas et al., 2011a, 2011b; Pearson et al., 2012; Pearson et al., 2013a, 2013b; van Zandvoort et al., 2008). Together with the current study's finding, the culmination of results suggest that MI-via-CALC might be an effective intervention for targeting stress as a root contributor challenging healthy behavioral choices.

Although the focus of this study was on stress, the HADS tool was also administered given the link between and among stress, anxiety, and depression (Magalhaes et al., 2010). Interestingly, participants in the study did use the terms stress and anxiety interchangeably, sometimes in the semi-structured interviews and sometimes candidly. Depression was not a theme from the qualitative findings, which was corroborated by the fact that participants tended to have higher scores on the PSS and HADS-A scales, and much lower scores on the HADS-D scale. This finding validates that participants were indeed identifying as being stressed and anxious, but not depressed. While all scores decreased at the same time points, and each scale (over time) produced a tidy set of patterns, further research is required to distinguish whether or not the intervention is appropriate for stress on its own, or is also appropriate for anxiety, as the current study results suggest.

The fact that the majority of participants in the study were female is noteworthy. This finding is not surprising, given that females experience (or report) higher rates of stress versus males (Statistics Canada, 2012). The researchers are interested in conducting additional studies that more overtly target male students, in service of acquiring a sample more representative of both sexes.

Limitations and Future Implications

The first limitation was the potential for self-selection bias inherent in all research studies (i.e. it is not possible to assess how those who agreed to participate differ from those who did not respond to the recruitment ad). More concerning was the *lack of a control/comparison group*. However, a previous study using the MI-via-CALC approach that attempted to have a control group was unsuccessful, such that there was a 70% attrition rate among those not receiving coaching (Mantler et al., 2010). While including a waitlist control group may have been ideal (as was seen in Mantler et al., 2014), this was not possible for the current study, as it may have served as a catalyst for harm and risk to the participants.

Another limitation was the *consistency* of coaching received by participants. Although efforts were made to reduce the number of coaches in the study, logistics in terms of the number of participants coaches could accept into their practices resulted in more coaches than ideal. As such, due to human variability, it is possible that there were some meaningful differences in the provision of coaching that may have impacted the experiences of the participants. While in some regard the coaching intervention provided a very real-world experiment (i.e. participants were able to schedule calls whenever it suited them best and discuss what they needed), there were inherent flaws with this approach. Participants were urged to have two

coaching sessions per month to provide some level of consistency; however, this did not occur. This lack of consistency in the coaching was reportedly due to participants' busy schedules. Consequently, participants finished the intervention at varying times – completion time ranged from March to mid-May 2014. This limitation (i.e. both coach variability and participant-driven inconsistencies) may not have had a profound impact on the results, as participants were fairly descriptive of how their levels of stress had altered due to the coaching. But, with respect to the quantitative rigor and validity of the study, this should be considered for future studies.

Participants did not receive all coaching via the telephone, which was the intended method of delivery for the intervention. Instead, participants utilized several methods such as Skype, telephone, and in-person coaching. In one respect, the varied methods of intervention delivery presented a real-life experience, in that participants were able to get the most out of the study by being able to use methods that were appropriate for their lives. However, with regard to the rigidity of the study and observing the impacts of the coaching intervention on the participants' levels of stress, it is important that the intervention be delivered in the same manner to every participant. Based on the semi-structured interviews, it seems that the various methods of intervention delivery were non-issues, but nonetheless, it is important to consider this factor for future research studies.

Although certification in CALC requires the successful completion of training and examination, a fidelity check was not conducted to ensure the use of CALC tools and the MI tenets. "Although not a perfect proxy for a thorough MI intervention fidelity assessment," the CALC model appears to tackle the previously discussed weaknesses of MI, due to the certification process of the coaches (Mantler et al., 2014, p. 2). A larger study including conducting a fidelity assessment on coaching sessions is recommended.

The attrition rate for the study was 20%, with six participants dropping out. With the exception of one participant who dropped out due to a family emergency, the researchers hypothesize that these participants were less ready to make changes to their lives/habits than they originally perceived when signing up for the study. Participants were randomly matched with coaches rather than interviewing and choosing their own (Kimsey-House et al., 2011). The random coach-client assignment may have resulted in a less-than-ideal match of personalities, which could have led to participant dropout. Regardless of the dropouts, the study achieved statistical power.

Although not an inherent limitation in the current pilot study, *long-term effects* of the study intervention are not reported in this paper. Data was collected in September 2014 to assess the longer-term (four-months post-intervention) impacts, however, only 18 participants participated (two participants no longer wished to participate, and four participants were lost due to outdated contact information). Statistical power was not achieved for the follow-up portion of the study, and although results remained positive and strong, the researchers did not feel it was suitable to present the data.

Considering the limitations, the current pilot study proved promising. The statistically significant results of the quantitative analyses, along with the qualitative findings about participants' positive experiences, are indicative of the beneficial nature of an MI-via-CALC intervention for university students with perceived levels of high stress. Thus, this should be an avenue that is explored further in both larger-scale and longer-term studies. In the future, the researchers envision conducting studies on a larger scale as well as over a longer duration. The researchers would like to assess a larger number of participants over a longer period of time, beginning with an entire academic year (versus the one-semester model used in the

current study). It would also be beneficial to conduct longitudinal studies, such that participants would be observed throughout the course of their degree (i.e. a four-year span), in order to detect the efficacy of long-term coaching, and the differences that may arise throughout the four years. Additionally, it would be of interest to the researchers to study a variety of participants (i.e. universities other than the host institution) in order to detect differences among different populations. Ideally, it is anticipated that results from future studies will help to inform policies regarding what needs to be done to address student stress; and that eventual evidence-based recommendations will help with integrating MI-via-CALC on a larger scale, such that students would be able to access a coach as a part of university-offered services.

References

Abouserie, R. (1994). Sources and levels of stress in relation to locus of control and self-esteem in university students. *Educational Psychology: An International Journal of Experimental Psychology, 14*(3), 323-331. doi: 10.1080/0144341940140306

Adlaf, E. M., Demers, A., & Gliksman, L. (Eds.). (2005). *Canadian Campus Survey 2004*. Toronto, ON: Centre for Addiction and Mental Health. Retrieved from http://www.utsc.utoronto.ca/~facilities/documents/CanadianCampusSurvey2004Report.pdf

Ajzen, I. (1988). *Attitudes, personality, and behavior*. Chicago, IL: Dorsey Press.

American College Health Association. (2001). *National college health assessment: Reference group report, Spring 2000*. Baltimore: American College Health Association.

American College Health Association. (2009). *National college health assessment II: Ontario reference group executive summary* (pp. 1–20). Baltimore: American College Health Association.

American College Health Association. (2013). *American college health association-national college health assessment II: Ontario province reference group executive summary spring 2013* (pp. 1-18). Hanover, MD: American College Health Association.

American College Health Association. (2013). *American college health association-national college health assessment II: Western university executive summary spring 2013* (pp. 1-17). Hanover, MD: American College Health Association.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* New Jersey, NY: Prentice-Hall, Inc.

Bates, B. (1992). The effect of demands for honesty on the efficacy of the Carleton Skills-Training Program. *International Journal of Clinical and Experimental Hypnosis, 40*(2), 88-102. doi: 10.1080/00207149208409650

Bjelland, I., Dahl, A. A., Haug, T. T., & Neckelmann, D. (2002). The validity of the hospital anxiety and depression scale: An updated literature review. *Journal of Pscyhosomatic Research, 52*(2), 69-77. doi: 10.1016/S0022-3999(01)00296-3

Blazer, D. G, Kessler, R. C., McGonagle, K. A., & Swartz, M. S. (1994). The prevalence and distribution of major depression in a national community sample: The national comorbidity survey. *The American Journal of Psychiatry, 151*(7), 979-986. Retrieved from http://search.proquest.com.proxy2.lib.uwo.ca/docview/220451541/fulltextPDF?accountid=15115

Byrd, D. R., & McKinney, K. J. (2012). Individual, interpersonal, and institutional level factors associated with the mental health of college students. *Journal of American College Health, 60*(3), 185-193. doi: 10.1080/07448481.2011.584334

Canadian Institute For Health Information. (2015). *Many more young Canadians using health services for mental disorders*. Retrieved from https://www.cihi.ca/en/types-of-care/specialized-services/mental-health-and-addictions/many-more-young-canadians-using

The Canadian Journalism Forum on Violence and Trauma. (2014). *Mindset: Reporting On Mental Health*. [PDF]. Retrieved from https://sites.google.com/a/journalismforum.ca/mindset-mediaguide-ca/mindset-media-guide-eng

Centre For Addiction And Mental Health. (2015). *Mental illness and addictions: Facts and statistics*. Retrieved from http://www.camh.ca/en/hospital/about_camh/newsroom/for_reporters/Pages/addictionmentalhealthstatistics.aspx

Chang, V. (2013, February 8). Concentration for $5 a pill. Maclean's On Campus. Retrieved from http://oncampus.macleans.ca/education/2013/02/08/concentration-for-5-a-pill/#more-51541

Cohen, S. (2000, February). Measures of psychological stress. Retrieved from http://www.macses.ucsf.edu/research/psychosocial/stress.php

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385–396. doi: 10.2307/2136404

Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.) *The social psychology of health: Claremont Symposium on applied social psychology*. Newbury Park, CA: Sage.

Deci, E .L., & Ryan, R. M. (2002). *Handbook of self-determination research*. Rochester, NY: University of Rochester.

Dixon, S. K., & Kurpius, S. E. R. (2008). Depression and college stress among university undergraduates: Do mattering and self-esteem make a difference? *Journal of College Student Development, 49*(5), 412–424. doi: 10.1353/csd.0.0024

Dougall, A. L., & Baum, A. (2003). Stress, coping, and immune function. In I. B. Weiner (Series Ed.) & M. Gallagher & R. J. Nelson (Vol. Eds.), *Handbook of Psychology: Vol. 3. Biological Psychology* (pp. 441-455). New Jersey, NY: Wiley.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Food and Drug Administration. (2011). *Adderall*. Retrieved from http://www.fda.gov/drugs/drugsafety/postmarketdrugsafetyinformationforpatientsandproviders/ucm111441.htm

Goodman, C. K. (2014, 21 May). Balancing act: Many new college graduates seek work/life balance, flexibility as they look for jobs. *Miami Herald*. Retrieved from www.miamiherald.com/2014/05/20/4127754/many-new-college-graduates-seek.html

Guba, E. G., & Lincoln, Y. S. (1989). *Fourth generation evaluation*. Newbury Park, CA: Sage Publications.

Hammer, L. B., Grigsby, T. L., & Woods, S. (1998). The conflicting demands of work, family, and school among students at an urban university. *The Journal of Psychology, 132*(2), 220-226. doi: 10.1080/00223989809599161

Hettema, J., Steele, J., & Miller, W. R. (2005). Motivational interviewing. *Annual Review of Clinical Psychology, 1*, 91-111. doi: 10.1146/annurev.clinpsy.1.102803.143833

Hunt, J., & Eisenberg, D. (2010). Mental health problems and help-seeking behavior among college students. *The Journal of Adolescent Health, 46*(1), 3-10. doi:10.1016/j.jadohealth.2009.08.008

Irwin, J. D., He, M., Bouck, L. M. S., Tucker, P., & Pollet, G. L. (2005). Preschoolers' physical activity behaviours: Parents' perspective. *Canadian Journal of Public Health, 96*(4), 299-303. Retrieved

from http://business.brookes.ac.uk.proxy2.lib.uwo.ca/commercial/work/iccld/ijebcm/documents/vol03issue1-paper-03.pdf

Irwin, J. D., & Morrow, D. (2005). Health promotion theory in practice: An analysis of Co-Active Coaching. *International Journal of Evidence Based Coaching and Mentoring, 3*(1), 29-38. Retrieved from http://business.brookes.ac.uk.proxy2.lib.uwo.ca/commercial/work/iccld/ijebcm/documents/vol03issue1-paper-03.pdf

Kimsey-House, H., Kimsey-House, K., Sandahl, P., & Whitworth, L. (2011). *Co-active coaching: Changing business, transforming lives* (3rd ed.). Boston, MA: Nicholas Brealey Publishing.

Lee, C. J. (2013). Horatio (Version 3.1) [Computer software]. Faculty of Health Sciences, The University of Western Ontario, London, Canada: Author. Available from http://publish.uwo.ca/%7ecjlee/

Leon, S. L., Cloutier, P., Bélair, M. & Cappelli, M. (2014). Media coverage of youth suicides and its impact on paediatric mental health emergency department presentations. *Healthcare Policy, 10*(1), 95-105. doi: 10.12927/hcpol.2014.23940

Lewis, R. M. (2004). The planning, design and reception of British front propaganda posters of the second world war. PhD thesis. UMI Dissertations Publishing. U219747.

Lyrakos, D. G. (2012). The impact of stress, social support, self-efficacy and coping on university students, a multicultural European study. *Psychology, 3*(2), 143-149. doi: 10.4236/psych.2012.32022

Magalhaes, A. C., Holmes, K. D., Dale, L. B., Comps-Agrar, L., Lee, D., Yadav, P. M., … Ferguson, S. S. G. (2010). CRF receptor 1 regulates anxiety behavior via sensitization of 5-HT2 receptor signaling. *Nature Neuroscience, 13*(5), 622-629. doi: 10.1038/nn.2529

Mantler, T., Irwin, J. D., & Morrow, D. (2010). Assessing motivational interviewing through co-active life coaching tools as a smoking cessation intervention: A demonstration study. *International Journal of Evidence Based Coaching and Mentoring, 8*(2), 49-63. Retrieved from http://monarchsystem.com/wp-content/uploads/2012/06/8-2-3_MantlerIrwinMorrow.pdf

Mantler, T., Irwin, J. D., & Morrow, D. (2013). The experience and impact of motivational interviewing-via-coaching tools on national smoker's telephone hotline employees. *International Journal of Evidenced Based Coaching and Mentoring, 11*(1), 55-68. Retrieved from http://business.brookes.ac.uk/commercial/work/iccld/ijebcm/documents/vol11issue1-paper-04.pdf

Mantler, T., Irwin, J. D., Morrow, D., Hall, C., & Mandich, A. (2014). Assessing motivational interviewing via co-active life coaching on selected smoking cessation outcomes. *Addiction Research & Theory*, Early online, 1-12. doi: 10.3109/16066359.2014.946410

Mental Health Commission of Canada. (2015). *The working mind: Workplace mental health and wellness summary*. Retrieved from http://www.mentalhealthcommission.ca/English/initiatives-and-projects/working-mind

McCabe, S. E., Knight, J. R., Teter, C. J., Weschler, H. (2005). Non-medical use of prescription stimulants among US college students: Prevalence and correlates from a national survey. *Addiction, 100*(1), 96-106. doi: 10.1111/j.1360-0443.2004.00944.x

McGill University. (2011, April 9). *National post – Academic doping on the rise*. Retrieved from http://www.mcgill.ca/newsroom/node/17223

Mesters, I. (2009). Motivational Interviewing: Hype or hope? *Chronic Illness, 5*(3), 3-6. doi: 10.1177/1742395309102242

Miller, W. R., & Rollnick, S. (2002). *Motivational Interviewing: Preparing People for Change* (2nd ed.). New York, NY: The Guildford Press.

Naar-King, S., & Suarez, M. (2011). *Motivational interviewing with adolescents and young adults*. New York, NY: The Guilford Press.

Newnham-Kanas, C., Gorczysnki, P., Morrow, D., & Irwin, J. D. (2009). Annotated bibliography of life coaching and health research. *International Journal of Evidence Based Coaching and Mentoring, 7*(1), 39-103. Retrieved from http://www.monarchsystem.com/wp-content/uploads/2014/03/Newnham-Annotated-Bib-2009-IJEBCM-article.pdf

Newnham-Kansas, C., Irwin, J. D., & Morrow, D. (2008). Co-Active life coaching as a treatment for adults with obesity. *International Journal of Evidence Based Coaching and Mentoring, 6*(2), 1-12. Retrieved from http://monarchsystem.com/wp-content/uploads/2012/06/6-2-1Newnham-KanasIrwinMorrow.pdf

Newnham-Kanas, C., Irwin, J. D., & Morrow, D. (2010). Motivational coaching: A functional juxtaposition of three methods for health behaviour change: Motivational interviewing, coaching, and skilled helping. *International Journal of Evidence Based Coaching and Mentoring, 8*(2), 27-48. Retrieved from http://business.brookes.ac.uk.proxy2.lib.uwo.ca/commercial/work/iccld/ijebcm/documents/vol08issue2-paper-02.pdf

Newnham-Kanas, C., Irwin, J. D., & Morrow, D. (2011a). Participants' perceived utility of motivational interviewing using co-active life coaching skills on their struggle with obesity. *Coaching: An International Journal of Theory, Research and Practice, 4*(2), 104-122. doi: 10.1080/17521882.2011.598176

Newnham-Kanas, C., Irwin, J. D., Morrow, D., & Battram, D. (2011b). The quantitative assessment of motivational interviewing using co-active life coaching skills as an intervention for adults struggling with obesity. *International Coaching Psychology Review, 6*(2), 211-225. Retrieved from http://www.monarchsystem.com/wp-content/uploads/2012/11/Quantitative-Assessment-of-MI-as-intervention-for-adults-w-obesity-20111.pdf

Passer, M. W., Smith, R. E., Atkinson, M. L., Mitchell, J. B., & Muirs, D. W. (2008). *Psychology: Frontiers and applications. Third Canadian edition*. Whitby, ON: McGraw-Hill Ryerson.

Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). London, UK: Sage.

Pearson, E. S., Irwin, J. D., Morrow, D., & Hall, C. (2012). The CHANGE program: Comparing an interactive versus prescriptive obesity intervention on university students' self-esteem and quality of life. *Applied Psychology: Health and Well-Being, 4*(3), 369-389. doi: 10.1111/j.1758-0854.2012.01080.x

Pearson, E. S., Irwin, J. D., & Morrow, D. (2013a). The CHANGE program: Methodology for comparing interactive co-active coaching with a prescriptive lifestyle treatment for obesity. *International Journal for Evidence Based Coaching and Mentoring, 11*(1), 69-84. Retrieved from http://business.brookes.ac.uk/commercial/work/iccld/ijebcm/documents/vol11issue1-paper-05.pdf

Pearson, E. S., Irwin, J. D., Morrow, D., Battram, D. S., & Melling, C. W. J. (2013b). The CHANGE program: Comparing an interactive vs. prescriptive approach to self-management among university students with obesity. *Canadian Journal of Diabetes, 37*(1), 4-11. Retrieved from http://www.monarchsystem.com/wp-content/uploads/2013/03/The-CHANGE-Program_-Comparing-an-Interactive-Vs.-Prescriptive-Approach-to-Self-Management-among-University-Students-with-Obesity.pdf

Preedy, V. R., & Watson, R. R. (Eds.). (2009). *Handbook of disease burdens and quality of life measures*. New York, NY: Springer New York.

Schiffner, J. (2010). Harder, better, faster, stronger: Regulating illicit Adderall use among law students and law school. Unpublished. Retrieved from http://works.bepress.com/jennifer_schiffner/1/

Schwartz, V., & Kay, J. (2009). The crisis in college and university mental health. *Psychiatric Times, 26*(10), 32-34. Retrieved from http://www.psychiatrictimes.com/articles/crisis-college-and-university-mental-health-0

Statistics Canada. (2010). *Trends in the age composition of college and university students and graduates*. Retrieved from http://www.statcan.gc.ca/pub/81-004-x/2010005/article/11386-eng.htm

Travis, H. (2011, 26 May). University faces mental health 'crisis.' *The Western News*. Retrieved from http://communications.uwo.ca/western_news/stories/2011/May/university_faces_mental_health_crisis.html

van Zandvoort, M., Irwin, J .D., & Morrow, D. (2008). Co-active coaching as an intervention for obesity among female university students. *International Coaching Psychology Review*, *3*(3), 191-206. Retrieved from http://monarchsystem.com/wp-content/uploads/2012/06/vanZandvoortIrwinMorrowInternationCoachingPsychReview.pdf

Westra, H. A. (2012). *Motivational interviewing in the treatment of anxiety*. New York, NY: The Guilford Press.

Westra, H. A., & Dozois, D. J. A. (2006). Preparing clients for cognitive behavioral therapy: A randomized pilot study of motivational interviewing for anxiety. *Cognitive Therapy and Research, 30*(4), 481-498. doi: 10.1007/s10608-006-9016-y

Whiteford, H. A., Degenhardt, L., Rehm, J., Baxter, A. J., Ferrari, A. J., Erskine, H. E. … Vos, T. (2013). Global burden of disease attributable to mental and substance use disorders: Findings from the global burden of disease study 2010. *The Lancet, 382*(9904), 1575-1586. doi: 10.1016/S0140-6736(13)61611-6

Whitworth, L., Kimsey-House, K., Kimsey-House, H., & Sandahl, P. (2007). *Co-Active Coaching: New skills for coaching people toward success in work and life*. California: Davies-Black Publishing.

Zigmond, A. S., & Snaith, R. P. (1983). The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica, 67*(6), 361-370. doi: 10.1111/j.1600-0447.1983.tb09716.x

Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology, 25*(1), 82-91. doi: 10.1006/ceps.1999.1016

Rebecca Fried, MSc is working toward completing her PhD in the Faculty of Health Sciences at Western University. Rebecca's primary research focuses on the application of motivational interviewing and coaching on the stress experience of university students.

Dr Jennifer Irwin is an Associate Professor in the Faculty of Health Sciences at Western University and a Certified Professional Co-active Coach. Her primary research focuses on the impact of motivational interviewing coaching on health-related behaviours.