Abstract

Metaphor theory bears many implications for counseling processes, but metaphor in extended counseling talk is seldom evaluated. This paper reports an exploratory skin conductance and discourse analysis of metaphorical versus literal communication styles in facilitating affective engagement over time. After background interaction with the counselor-experimenter, role-playing clients (N=60) were asked either a metaphorical or literal stimulus question related to the topic of academic problems. This was followed by spontaneous elaboration of either stimulus. A mixed-effects model with random subject intercepts suggests that both styles are tied to increased affective engagement, but the increase was significantly more apparent in the metaphorical style. However, no significant differences were found immediately after stimulus. The results are corroborated by a post-experiment survey where the metaphorical style was rated significantly better for expressing emotions and experiences and introducing new frames of reference. A further exploratory analysis of discourse features uncovered key components of the metaphorical style and their specific implications for engagement. The study suggests that a metaphorical style is more affectively engaging but requires sustained follow-up and spontaneous metaphor elaboration skills. Limitations are critically discussed given the infancy of the present approach.

Keywords: affective engagement, metaphor, counseling, communication style, skin conductance

Introduction

The claims of conceptual metaphor theory (Lakoff, 1993) have led to many applied studies in different language, discourse and cognitive contexts. A good example is psychological counseling, defined as the verbal mental health activity where clients are guided to change their behaviors, cognitions, and emotions (Norcross, 1990). Many theorists and practitioners across counseling paradigms agree that speaking and/or thinking metaphorically can be useful for a range of processes and outcomes. For example, metaphors can provide a concrete means to talk about abstract feelings and emotions, change perspectives, alleviate resistance, and enhance the therapeutic relationship (Cirillo & Crider, 1995; Lyddon, Clay, & Sparks, 2001). Counseling research has drawn from cognitive linguistic and other theories of metaphor to develop usage guidelines for practitioners (Kopp & Craw, 1998; Stott, Mansell, Salkovskis, Lavender, & Cartwright-Hatton, 2010; Wickman, Daniels, White, & Fesmire, 1999), explore the discourse characteristics of metaphors in clinical practice (Levitt, Korman, & Angus, 2000; Tay, 2013), and even the potential use of metaphor as a cultural resource in specific client populations (Ahammed, 2010; Dwairy & Van Sickle, 1996).

However, this body of work tends to view metaphors as delimited constructs, which overlooks the dynamic nature of counseling talk. For example, two well-known constructs are the 'source' and 'target' of a metaphor. The target is described and conceptualized in terms of the source, as in 'life is a journey' where life is the target and journey the source. Many studies therefore focus mostly on distinct sources and targets as units of analysis. Examples range from tracking targets like 'change' and 'depression' over the course of treatment (Levitt et al., 2000; Sarpavaara & Koski-Jännes, 2013), to guidelines on the use of 'stock metaphors' like 'anorexia is driving a car without gas' (Blenkiron, 2010; Stott et al., 2010). Another sign of this tendency is the perceived

strict dichotomy between counselor-generated and client-generated metaphors (Kopp & Craw, 1998). There are good reasons to maintain such distinctions, such as to facilitate research design and reflect established institutional roles. However, they also obscure the basic fact that counseling often involves complex co-construction of spontaneous metaphors (McMullen, 2008; Tay, 2016). Although counselors and clients might focus on a distinct introduced metaphor, we can expect it to be 'diverted' over time (Cameron, 2008) as a natural consequence of a broader and emergent metaphorical communication style. Sources may be modified in subtle ways or even redirected at new targets (and vice versa). Another question linked to time is not just what and how, but *when* metaphor-related interventions should take place. The above reasons have made it a well-known challenge to empirically evaluate metaphor in counseling while respecting its spontaneity (McMullen, 1996).

This paper is an exploratory attempt to evaluate one such aspect – the relationship between (non)-metaphorical communication styles and clients' affective engagement. Affective engagement refers to the degree of emotional and cognitive response towards stimuli, with research across contexts like education and counseling suggesting that high engagement levels are generally ideal (Fredricks, Blumenfeld, & Paris, 2004). The notion of client engagement is closely related to the much-discussed therapeutic alliance (Horvath & Greenberg, 1994), or the quality of the relationship between counselor and client. Engaged clients are more likely to bond with their counselors, endorse treatment goals, participate more deeply and longer, and report greater satisfaction with their treatment (Thompson, Bender, Lantry, & Flynn, 2007). Although affective engagement may not always be interpersonally directed, it remains a key component of clients' sense of commitment to the treatment process. The links between metaphor and affect nevertheless remain underexplored compared to those between metaphor and conceptualization

over the past decades. Existing studies on the affective dimensions of metaphor can be classified into several strands: i) cross-linguistic metaphorical descriptions of emotional experience (Geeraerts & Grondelaers, 1995; Kövecses, 2000; Lakoff & Kövecses, 1987; Yu, 2008); ii) metaphors and emotional resonance in public discourses such as immigration (El Refaie, 2001), biotechnology (Holmgreen, 2008), and climate change (Nerlich & Jaspal, 2012); iii) how metaphors influence decision-making on emotionally relevant issues (Boeynaems, Burgers, Konijn, & Steen, 2017; Jeong, 2008; Jia & Smith, 2013), and iv) psycho-neurological indications of metaphor and emotional processing (Citron & Goldberg, 2014). None of these studies, however, relate specifically to metaphor and affect in the counseling context.

A useful method to infer affective responses in counseling is to measure skin conductance levels (Cacioppo, Tassinary, & Berntson, 2007). Skin conductance is the ability of the skin to conduct electricity, which momentarily increases during physiological arousal. It is quantified by applying an electrical potential between two skin contact points and measuring the resulting current flow between them (Braithwaite, Watson, Jones, & Rowe, 2015). There are important advantages of this method in the present context. Firstly, skin conductance is non-volitional and thus reduces participant bias as well as the analyst's subjective interpretation. It can therefore complement more common methodologies like self-reported questionnaires or discourse analysis of transcripts where subjective judgments are often made on the ostensible affective qualities of metaphors. Secondly, we can measure both immediate responses to specific stimuli and longer-term responses to an extended activity, thus differentiating immediate versus long-term responses to metaphor use. Previous studies have reported correlations between skin conductance levels and self-reported changes in client experiences (Glucksman, Quinlan, & Leigh, 1985), perceived counselor empathy (Robinson, Herman, & Kaplan, 1982), and quality of social-

emotional interaction (Marci, Ham, Moran, & Orr, 2007). While theory suggests that metaphors trigger heightened emotional responses in clients (Levin, 1980), and extant evidence shows that metaphorical sentences are more emotionally engaging than literal counterparts (Citron & Goldberg, 2014), direct experimental research on metaphor use and affective response in spontaneous counseling interaction is still lacking. Our recent study (Author, 2019) was an initial step to show that using metaphors as an interpretation strategy in picture-based counseling (Ginicola, Smith, & Trzaska, 2012; Stevens & Spears, 2009) produces higher skin conductance levels than a non-metaphor strategy. Rather than investigate affective responses to isolated metaphors, the present study reflects the spontaneity of counseling talk by comparing skin conductance responses to a metaphorical communication style versus a literal counterpart deployed over an extended period. A metaphoric communication style is defined as the counselor introducing an overarching metaphor and probing its inferences for the target topic with the client in a spontaneous manner. There is no strict control over the exact nature of this elaboration (e.g. what types of mappings to focus on), or how much it should dominate the conversation. We can describe this style in discursive terms as co-constituted by metaphorical language and other interactional elements like signals and hedges that are known to co-occur with metaphors in conversation (Cameron & Deignan, 2003; Goatly, 1997; Tay, 2014). While a metaphorical style is believed to help engage clients in collaborative discussion (Kopp & Craw, 1998; Mathieson, Jordan, Carter, & Stubbe, 2015), supporting empirical evidence is thus far lacking. On the other hand, a literal communication style means that a target topic is discussed without explicit appeal to any overarching metaphor, although tangential metaphorical language might still be used on occasion. The following specific questions are addressed in this paper.

1. Is a metaphorical communication style tied to significantly higher levels of affective arousal in the progression of spontaneous counseling?
2. Are the affective differences of the two styles (if any) immediately apparent upon the introduction of metaphor, or gradually manifested across time?
3. What are the discourse features that co-constitute the metaphorical style?

The present approach is novel in metaphor and counseling research in that it attempts to make meaningful comparisons across controlled experimental conditions while still preserving the spontaneous nature of metaphor in counseling interaction. For RQ1 we hypothesize that the metaphorical communication style facilitates stronger affective response than the literal style. The skin conductance measures are followed up by a post-experiment survey to compare participants' self-reported experiences between the two styles. For RQ2, existing literature is mostly agnostic since temporal factors have not been of primary interest in relevant studies. It nevertheless bears implications for the question of whether the affective influences of metaphor take time to develop. RQ3 will be addressed by examining transcripts for discourse features that are key components of the metaphorical style, comparing them with the literal style where appropriate, and exploring how each feature is linked to affective engagement.

Methodology

Participants

Participants are native Mandarin Chinese-speaking university students (*N*=60) role-playing as clients interacting with a single qualified counselor who also served as the experimenter. Sample size is adequate based on power analysis of a previous pilot study (α=0.05, power=0.80, effect size= 0.25). Role-played clients are acceptable in lieu of actual clients in counseling research for ethical and practical reasons (Matthews, Gay, & Doherty, 2014). In this case, the students would be familiar with the experimental target topic of academic problems and are also unlikely to be suffering from mental health conditions that may impede metaphor processing and production.

Each participant was randomly assigned to the metaphorical or literal communication style condition (*N*=30 each) to interact with the counselor-experimenter. There was no requirement to conform to a strict verbal protocol other than the two different stimuli. This was an important defining criterion for the two styles as explained above, in order to study spontaneous elaboration rather than single isolated metaphors. The potential pitfalls of using confederates as experimental interactants are well known. However, the present situation aligns with key corrective recommendations in Kuhlen and Brennan (2013): i) it is based on the need for counseling skills to enhance the validity of interaction rather than convenience, ii) participants' knowledge is in line with their expectations towards the confederate as a trained counselor, iii) scripted utterances only occur at a single critical point, iv) the confederate has task initiative as addresser rather than addressee of the stimuli, and v) the experimental activity is collaborative with genuine goals, optimizing authenticity. Other measures were also adopted to ensure comparability across conditions. Besides the counselor-experimenter's professional experience

to not exhibit obviously different interactional behavior (e.g. gestures, facial expressions, pitch and intonation) to different people, the experimental trials were arranged intermittently (i.e. a metaphorical trial was followed by a literal trial) to reduce possible effects of excessive use of a communication style on the counselor-experimenter.

Stimuli design and matching

Stimulus questions were matched to ensure that literal and metaphorical stimuli differed only in terms of metaphoricity and no other important aspects. Twenty-six native Mandarin Chinese speakers (15 women, *M*=27.5 years, *SD*=4.45) rated 40 constructed literal-metaphorical sentence pairs (20 verbal metaphors, 20 nominal metaphors) for understandability (UND), naturalness (NAT), familiarity (FAM), metaphoricity (MET), and meaning similarity (SIM) along a 7-point scale (Cardillo, Schmidt, Kranjec, & Chatterjee, 2010). To be usable, the metaphorical and literal sentences in each pair have to i) differ significantly in terms of metaphoricity, ii) differ non-significantly in terms of the rest, and iii) have a mean score of 5.0 or above for SIM. The best performing sentence pair is shown in Table 1 with mean ratings and p-values (matched pairs t-tests) for UND, NAT, FAM, MET, and mean ratings with 95% confidence intervals for SIM. This was the only sentence pair used in the experiment trials to maximize comparability between subjects.

Sentence pair	UND	NAT	FAM	MET	SIM
Literal: 上课的内容能理解透彻吗？Can you fully understand the class? **Metaphorical:** 上课的内容能完全吃透吗？Can you fully 'eat through' the class?	Lit=6.69, Met=6.65 p=0.75	Lit=6.5, Met=6.65 p=0.46	Lit=6.35, Met=6.54 p=0.33	Lit=2.81, Met=5.04 p<0.01	6.04 (5.53-6.54)

Table 1. Stimulus pair and relevant statistics

Experiment trial

The overall experimental design is mixed factorial. Communication style is a between-subjects variable to prevent carry-over effects from exposure to both styles, while time period (before vs. after stimulus presentation) is a within-subjects variable. The two dependent variables were: i) skin conductance level (SCL), which reflects a general background level of affect over time, and ii) skin conductance response (SCR), which reflects immediate response to the stimuli as explained below. Both are measured in μS, the standard unit for conductance. Measurements were made continuously at 40Hz, or once every 0.025s, with two Ag/AgCl electrodes on the middle joint of the index finger of the non-dominant hand. The minimum amplitude change was set at .01 μS with a latency window of 1s. Audio was concurrently recorded to obtain complementary discourse data.

Figure 1 outlines the experiment process. Participants were informed that the study was about communication strategies in counseling without specific details like metaphorical versus literal styles. They were asked to interact naturalistically with the counselor-experimenter. Each trial began with five minutes of habituation measurement where participants were asked to relax. The counselor-experimenter then initiated a five-minute chat (Period 1) on the topic of academic problems with a standardized opening (今天我想和你聊一聊你在学习上遇到的一些困难或挑战 *Today I'd like to chat with you about the problems or challenges you might be facing in your studies*). At the end of five minutes, either the metaphorical ('eat through') or literal stimulus question ('understand') was presented. Period 2 is the variable time between the end of the stimulus and the start of participants' response. Following Dawson et al. (2007), the highest change of conductance taking place within a latency window of 1-4s after stimulus presentation is assumed to be elicited by the stimulus, regardless of whether subjects have begun to respond. Lastly, five minutes of subsequent talk guided by either a metaphorical or literal communication style comprised Phase 3.

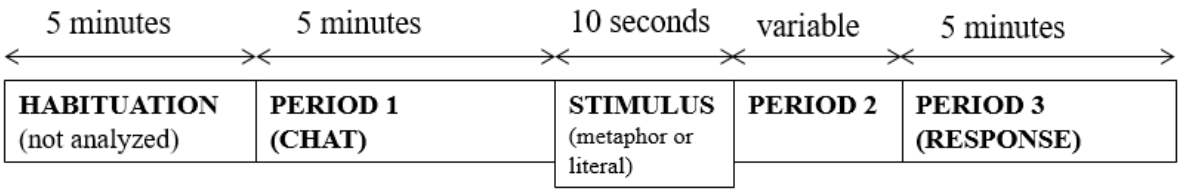

Figure 1. Outline of experiment trial

Survey

Participants completed a 15-item survey after the trial. The items are based on a summary of major counseling functions claimed to be performed well by metaphors (Lyddon et al., 2001). Two of these functions are of specific relevance to affective engagement: 'expressing emotions and experiences', and 'introducing new frames of reference'. Each is represented by three 5-point Likert scale items measuring participants' views of how effective the interaction was. The items for the first function are i) I can effectively express how I feel about my studies to the counselor, ii) I can effectively describe my experiences to the counselor, iii) I and my counselor could express abstract things in concrete ways, and for the second function, i) the counselor is able to help me change my perspective, ii) the therapist is able to suggest new ways of looking at problems, iii) the therapist has offered possible solutions. The survey results offered potential convergent evidence with skin conductance differences between the styles.

Discourse analysis

Transcripts of Period 3 were also analyzed to explore discourse features that co-constitute the metaphorical style, how they compare with the literal style, and the relationship of each feature to observed SCL changes.

Results and discussion

Experimental results

To minimize the effects of individual variability, skin conductance values were range corrected with the formula $SCL_{corrected} = (SCL_{observed} - SCL_{min})/(SCL_{max} - SCL_{min})$ (Dawson et al., 2007). This converts each SCL value every 0.025s into a proportion of that individual's SCL range. The range-corrected values were then averaged for Period 1 and Period 3. Shapiro-Wilk tests suggested that most variables were normally distributed except for SCL_Period1 and SCR in the metaphorical style. Table 2 shows the relevant descriptive statistics.

	Style	SCL_Period1	SCL_Period3	SCR
Average	Literal	0.483	0.550	-0.00211
	Metaphorical	0.471	0.633	0.0263
Shapiro-Wilk p-value	Literal	0.742	0.279	0.920
	Metaphorical	0.029	0.152	0.035

Table 2. Descriptive statistics of range corrected SCL and SCR

The first step of the data analysis was to compare average SCL_Period1 and SCL_Period3 between the metaphorical and literal styles using a linear mixed effects model. To further probe

the nature and implications of subject variability, average SCL for Period 1 was then correlated with Period 3 across participants. Following the SCL analysis, average SCR in Period 2 (immediately after stimulus) was then compared to explore potential differences between immediate and extended responses to stimuli in both styles. Both frequentist and Bayesian statistical inferencing were used where relevant to evaluate the likelihood of data under the null as well as alternative hypotheses (Jarosz & Wiley, 2014; Wagenmakers, 2007). The analyses shed light on the relative performance of a metaphorical versus literal style in affective engagement over extended interaction. This was supported by a post-experiment survey where participants rated their subjective experiences in both styles. Figure 2 plots average SCL as the interaction progresses from the spontaneous talk before stimulus presentation (Period 1) to the follow-up discussion afterwards (Period 3), for both communication styles. The grey lines represent estimated effects for each subject. Error bars indicate one standard error.

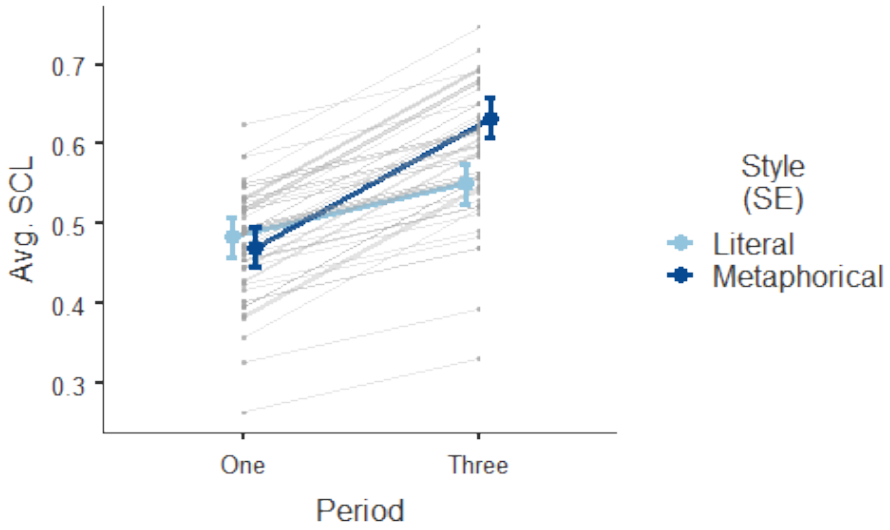

Figure 2. Comparison of SCL across time periods and between styles

Style and Period were treated as fixed effects and subject intercepts as random effects in the mixed effects model. Main indicators of model fit (R^2-conditional=0.528, R^2-marginal=0.186, intraclass correlation coefficient (ICC) of random components=0.419) confirm its appropriateness. Fixed effect omnibus tests reveal a significant interaction effect between Period and Style on average SCL, $F(1,58)=6.34$, $p=0.015$, $\eta p^2=0.098$. Simple effects analysis confirms that affective engagement increased significantly from Period 1 to 3 for both the literal ($F(1,58)=6.4$, $p=0.014$, $\eta p^2=0.184$) and metaphorical ($F(1,58)=37.08$, $p<0.001$, $\eta p^2=0.555$) communication styles. This was expected as the counselor-experimenter effectively developed the topic of academic difficulties and led participants through a focused discussion after the question prompt. However, confirming the hypothesis in RQ1, the increase was clearly more apparent for the metaphorical communication style. An alternative analysis with Bayesian repeated measures ANOVA (Table 3) was also conducted. BF_{10} (Period)=86639.57; i.e. the data are 86639.57 times more likely to be observed by including this effect than excluding it, affirming the previous analysis. The interaction (Period * Style) is evaluated by dividing the BF_{10} of the last row with the previous row; i.e. 3.66, which likewise affirms the relative increase in affective engagement of the metaphorical communication style.

Models	P(M)	P(M|data)	BF_M	BF_{10}	error %
Null model (incl. subject)	0.20	3.47e -6	1.39e -5	1.000	
Period	0.20	0.30	1.72	86639.57	1.05
Style	0.20	1.45e -6	5.79e -6	0.417	0.86
Period + Style	0.20	0.15	0.71	43275.91	2.06

Models	P(M)	P(M|data)	BF_M	BF_{10}	error %
Period + Style + Period * Style	0.20	0.55	4.87	158276.38	5.51

Table 3. Comparison of Bayes factor estimates under Bayesian repeated measures ANOVA

The general rise of SCL from Period 1 to Period 3 across both communication styles raises the question of whether this increase tends to be consistent across participants or exhibits idiosyncratic patterns of potential theoretical relevance. The mixed effects analysis above, which modeled random subject-specific intercepts, suggests considerable variability in this regard. A within-subjects correlational analysis with Bayesian factor estimates was thus performed for each communication style to see if relatively low/high SCLs in Period 1 tended to be maintained in Period 3. Figure 3 shows the scatterplots for the literal followed by the metaphorical style.

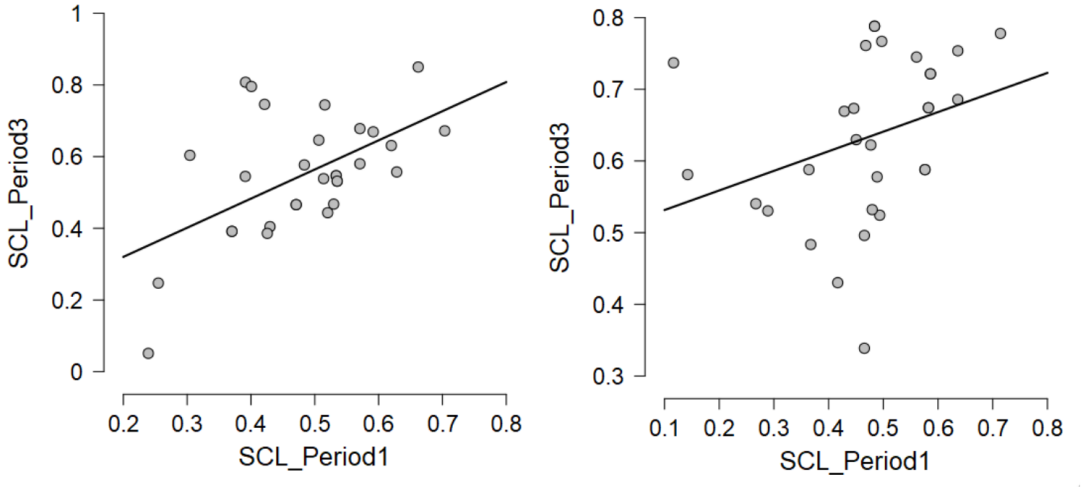

Figure 3. Within-subject correlations of SCL between Period 1 and Period 3 for literal (left) and metaphorical (right) communication styles

The results suggest that participants were reasonably consistent in maintaining a steady level of SCL increase from Period 1 to Period 3 in the literal style (r=0.541, n=30, p=0.002, BF_{10}=21.14). The metaphorical style, on the other hand, is less clear (r=0.321, n=30, p=0.084, BF_{10}=0.943). A closer examination of the scatterplot (Figure 3) reveals several participants who deviated from the general steady level of increase, either having disproportionately higher SCL in Period 3 than Period 1 (i.e. far above the regression line) or vice-versa (far below the regression line). This has important implications in that, although both frequentist and Bayesian methods point to the marginal superiority of the metaphorical communication style across the sample of participants, there is greater volatility in individual responses towards metaphor. The general issue of individual differences in metaphor reception and/or production (Kövecses, 2005, 2015) has been discussed at length, with specific import in the counseling context given the inherent attention to individual clients. While a detailed investigation of these individual differences is not the present focus, and does not undermine the overall findings, counselors are again reminded that the characteristics and receptiveness of individual clients are of considerable importance.

Next, the average SCR in Period 2 between the metaphorical and literal communication styles were compared. This indicates affective response towards the immediately prior stimulus question, which is potentially distinct from the more extended response in the subsequent spontaneous elaboration in Period 3. Figure 4 shows the comparison with error bars indicating 95% Bayesian credible intervals.

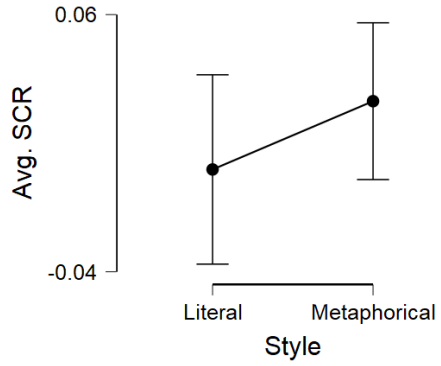

Figure 4. Comparison of post-stimulus SCR between styles

A Mann-Whitney U test suggests no significant difference between the two styles in eliciting an immediate post-stimulus response, U=385, n_1=n_2=30, p=0.34. A Bayesian Mann-Whitney U yielded BF_{10} = 0.436; the data are 0.436 times more likely to be observed under the alternative than null hypothesis. This contrasts with the prior comparison across the more extended Periods 1 and 3 where the metaphorical style was associated with higher average SCL. Addressing RQ2, affective differences in the two styles are therefore not immediately apparent after the metaphor stimulus but are gradually manifested as talk progresses. The following examples illustrate how people vary in their immediate verbal engagement with the metaphor stimulus (E=experimenter, P=participant).

1. E: 回想以前读文献的过程，读一个东西能完全吃透吗？Thinking back to when you read the literature, can you fully eat through what you read?

P: 包括以前，包括现在我也在读，因为打算以后申请学校嘛。吃透这件事情……吃不透。 I have been reading literature earlier and now because I'm planning to apply to schools. Regarding eating through…I can't eat through.

E: 吃不透。怎么吃不透? You can't eat through. In what way can't you eat through?

P: 我以为我即便这个，比如一篇 paper 的页数即便是比较少，或者是我觉得，我以为我读懂了，但是事实上也没有，都是一些，其实是囫囵吞枣。 I thought although a paper might only have a few pages, or I might think I understand it, I actually haven't. It's swallowing a date without chewing it.

2. E: 回想以前读文献的过程，读一个东西能完全吃透吗？Thinking back to when you read the literature, can you fully eat through what you read?

   P: 大部分可以。有一些难的要反复看文章。Most of it, yes. For some difficult papers I need to read them repeatedly.

   E: 反复看文章。你觉得反复看一个文章到什么程度对你来说算是吃透了。Read them repeatedly. To what degree do you think you need to read a paper repeatedly to be able to eat through it?

   P: 嗯，就是能用它去分析我的数据。To be able to use it to analyze my data.

In Example 1, the stimulus was immediately noticed by the participant (within the 1-4s latency window) and extended in prior turns in collaborative fashion. This was followed by further engagement with the metaphorical idiom, 'swallowing a date without chewing it', to describe her paper reading. In Example 2, however, the participant initially responds in a literal way (also within the latency window) and continues to do so even after the experimenter repeats the metaphor again. These varied verbal responses may explain why the metaphorical and literal styles do not significantly differ immediately post-stimuli.

Post-experiment survey

Table 4 shows the average survey scores for the items under the two functions, 'expressing emotions and experiences' and 'introducing new frames of reference'. Their respective Cronbach's alphas are α=0.782 and α=0.792 (3 items each), suggesting adequate reliability.

	Style	**Express_emotions**	**New_frames**
Average	Literal	3.59	3.47
	Metaphorical	4.10	3.97
Shapiro-Wilk p	Literal	0.059	0.274
	Metaphorical	0.002	0.025

Table 4. Descriptive statistics of survey results

Mann-Whitney U tests suggest that participants in the metaphorical style gave significantly higher ratings for both the 'expressing emotions' (U=278, n_1=n_2=30, p=0.01) and 'introducing new frames' functions (U=304, n_1=n_2=30, p=0.03). Bayesian Mann-Whitney U tests yielded BF_{10} = 4.36 and BF_{10} = 3.09 respectively. The results thus provide some corroborating evidence that the metaphorical style is associated with stronger levels of affect-related experiencing, in terms of both unconscious and conscious feedback. Importantly, however, the survey was unable to accurately evaluate how these perceptions shift from Period 1 to 3.

Exploratory analysis of discourse features

The above analyses established positive links between a general metaphorical style and both physiological and subjective measures of affective engagement. The final step is to explore the discourse features that co-constitute this style, compare them with the literal style where relevant, and how they might have individually contributed to the observed SCL changes. Importantly, we cannot yet claim that specific linguistic elements are directly responsible for SCL changes at specific time points. Skin conductance has an inherent latency period that varies across individuals and time, making it hard to pinpoint correspondences between measurements and a spontaneous stream of talk. However, the present exploratory analysis may help refine hypotheses to be tested in future research.

Transcripts of Period 3 (post-stimuli) were segmented into lexical units with the *Pangu Fenci* segmentation software and analyzed by two trained raters. Following Author (2019), identification of features was informed both deductively by previous research and inductively by the present context; i.e. features that reflect different aspects of interactional engagement with

the overarching metaphor. Reliability was maximized by regular discussion and cross-checking following guidelines for qualitative metaphor analysis (Cameron & Maslen, 2010). The five features were i) lexical units for the source concept of 'eating through', ii) lexical units for the target topic of academic problems, iii) metaphor signals, iv) uncertainty expressions, and v) turn-taking behaviour of the dyad. These are discussed in turn below.

Lexical units reflecting the source/target are fundamental building blocks of any metaphor. The ways in which the original source/target is developed (i.e. types), and their frequencies in spontaneous talk (i.e. tokens), are both potential drivers of affective engagement. In terms of types, the original 吃透 'eat through' was often repeated but also extended in spontaneous and creative ways by participants. Examples 3 and 4 illustrate the use of idioms semantically related to the source concept of eating, while 'indigestion' in Example 5 is a novel extension. It appears in these cases that developing the original source is a helpful way to respond to the experimenter's request for clarification of participants' feelings. The original target topic of academic understanding was likewise developed in various ways throughout the interaction, often referred to pronominally '它' but also by its multiple aspects like reading literature '读文献', failing exams '挂考试', assignments '作业', and so on.

3. E: 吃不透。怎么吃不透? You can't eat through. In what way can't you eat through?

   P: 我以为我即便这个，比如一篇 paper 的页数即便是比较少，或者是我觉得，我以为我读懂了，但是事实上也没有，都是一些，其实是囫囵吞枣。 I thought

although a paper might only have a few pages, or I might think I understand it, I actually haven't. It's swallowing a date without chewing it.

4. E: 那第二次考试压力会比第一次还要大吧? The pressure of retaking the exam should be greater than the first?

   P: 人家说什么吃一堑，长一智，我挂了一次下次就比较 ok 了。People say you 'eat a moat' and grow wiser, I failed the first time but the next time will be okay.

5. E: 读的东西吃不透，具体来说是什么感觉？ You can't eat through the things you read, how exactly does that feel like?

   P: 有时候参考文献时真的会觉得消化不良。When I read the literature it sometimes feel like indigestion.

In terms of tokens, repetition of the same or synonymous unit is a possible indication of collaborative lexical entrainment (Brennan & Clark, 1996) that might drive affective arousal independent of metaphoricity. The examples in the previous section, for example, illustrate different degrees of repetition. Example 1 has six source and five target units while Example 2 has two source and six target units. While source unit repetition cannot be compared because it is

absent in the literal style, comparing target unit repetition between the styles could suggest whether lexical entrainment might also account for heightened affective engagement.

Next, metaphor signals are co-textual elements that draw attention to the use of metaphor (Cameron & Deignan, 2003; Goatly, 1997) and are therefore important elements of the metaphorical style. Although not every metaphor is signaled, those that are can be seen as an "overt invitation" (Steen, 2011:37) to focus on the metaphor and its inferences. Examples 6 and 7 are illustrative. The former is an explicit explanation of the metaphor by the experimenter, and the latter illustrates participants' explicit reflection on how the metaphor should be used to think about the issue. It is possible that in such cases, the signalling of metaphor is a potential driver of affective engagement for both speaker and hearer.

6. E: 吃不吃得透代表你是否真的懂它。Whether you can eat through it represents whether you truly understand it.

7. P: 要我把它比喻成吃不吃得透，我得好好想一下。If I want to compare it to eating or not eating through, I have to think about it carefully.

Uncertainty markers express a stance of uncertainty or tentativeness towards co-occurring linguistic units, metaphorical or otherwise. They are common in healthcare contexts (Prince, Frader, & Bosk, 1982) and help convey that metaphors only approximate the 'true' situation (Author, 2014). They are likewise potential drivers of engagement by triggering contemplation of the topic at hand. Examples 8 (metaphorical) and 9 (literal) demonstrate the experimenter

using the typical counseling strategy of hedging their evaluation of what the participant just said. This communicates the notion that clients have the agency to 'correct' how counselors judge the situation (unlike in most physical health consultations), and at the same time triggers them to do so (Author, 2014).

8. E: 吃不透了，好像有一点想放弃的意思? You can't eat through anymore. It seems a little like giving up?

9. E: 主要的问题还是在于你提到的可能不熟悉的术语太多是吧。The main issue is, like you mentioned, that there are perhaps too many unfamiliar technical terms.

Example 10, 11 (metaphorical) and 12 (literal) show how participants use uncertainty markers. Example 10 shows uncertainty of the intended meaning of the metaphor and appears to have invited the participant to engage with the different possibilities. Example 11, on the other hand, expresses uncertainty over how the metaphor makes the participant feel, and likewise motivates exploration. Uncertainty is also expressed in the literal style – Example 12 is a series of hedged elaborations on the equivalent literal notion of 'fully understand'. Similar to target units, uncertainty markers occur in both styles and their frequencies can thus be examined across the styles as a confounding factor for heightened engagement

10. P: 你说消化不了的意思有点模糊，我不知道是我读不懂还是读不下去了。What you mean by indigestion is a little vague. I don't know if it means don't understand, or I can't bring myself to read anymore.

11. P: 想象着吃不透的感觉，可能就比较辛苦吧。Thinking about how it feels to not eat through, it feels tough I suppose.

12. P: 理解透彻……就可能看你的目的吧。有的时候就是看看他做什么方向的看一下，那种就是看个摘要就够了，里面内容就不细看因为挺费劲的，大概看一下摘要什么的。但是如果你想照着他那个做，或者是你做的东西跟他类似的话，就会很费劲地去看那个东西。可能要做一段看一段。Fully understand…it might depend on your aim. Sometimes I want a glance at the research direction, so reading the abstract is enough. I will not read the details because it takes effort, so I'll briefly read the abstract. But if you want to follow its methods or if your research is similar, you will put in a lot of effort to read it. You might need to do and read at the same time.

The final discourse feature relates to the turn-taking behaviour of the dyad, operationalized here as the number of turns and number of lexical units spoken. A turn is defined as all of a speaker's utterance up to when the other speaker takes over (cf. Du-Babcock & Tanaka, 2013). These are basic measures of interactional activity and, by inference, engagement. We can compare the number of turns between styles, as well as number of lexical units spoken by experimenters

versus participants both within and across styles, to examine if they might account for differences in affective engagement.

Table 5 compares the mean frequencies of the above discourse features between and within styles, as well as how they each correlate with SCL changes (from Period 1 to Period 3). Normalized frequencies (per lexical unit) are indicated where appropriate.

Feature	**Metaphorical Style (M)**	**Literal Style (L)**	**Analyses**	
			Comparison	**Correlation with SCL change**
Source units	32.9 (0.05 per unit)	-	-	***r*= 0.84 (p<0.01)**
Target units	65.5 (0.1 per unit)	48.4 (0.09 per unit)	**M > L** (p<0.001)	M: *r*= 0.032 (p=0.87) L: *r*= 0.167 (p=0.38)
Metaphor signals	13.9 (0.02 per unit)	-	-	***r*= 0.57 (p<0.01)**
Uncertainty markers	30.2 (0.05 per unit)	24.0 (0.04 per unit)	M=L (p=0.06)	**M: *r*= 0.95 (p<0.01)** **L: *r*= 0.646 (p<0.01)**
No. of turns	43.4	40.3	**M>L (p=0.018)**	M: *r*= 0.33 (p=0.073) L: *r*= -0.26 (p=0.17)
No. of lexical units spoken (E vs. P)	E=195.3 P=452.6 **P>E** (p<0.001)	E=221.1 P=393.7 **P>E** (p<0.001)	E: M=L (p=0.07) **P: M>L** (p<0.001)	M: *r*= -0.03 (p=0.87) L: *r*= -0.22 (p=0.25)

Table 5. Discourse features across communication styles and relationships with SCL change

Source units were produced at an average rate of 0.05/lexical unit in the metaphorical style. Its substantial positive correlation with SCL change across participants suggests that the repetition of 'eating through' and its semantic extensions (see examples above) partially drives affective

engagement. This contrasts with target units. Although the target and its variants are more frequently produced than sources, and significantly more so in the metaphorical than literal condition, target units are not significantly correlated with SCL change in either condition. This supports the implicit metaphor theoretic assumption that sources drive the inferential potential of metaphors. Similar correlational tendencies are found for metaphor signals and uncertainty markers. There is no significant difference in frequency of uncertainty expression between the two styles, but both features, which as illustrated above trigger attention to the co-text, are linked to increased SCL. The expression of uncertainty in the metaphorical style is particularly strongly correlated with SCL change, suggesting that tentative metaphor exploration with explicit allowance of different inferential possibilities might be especially helpful. Lastly, for turn-taking behaviour, significantly more turns were produced by metaphorical than literal dyads. Participants also spoke significantly more than the experimenter in both styles, and participants in the metaphor style spoke significantly more than their literal counterparts. These findings suggest that the metaphorical style can facilitate a stronger degree of dialogic interaction and client participation, both of which are ideal in counseling. However, none of the turn-taking behavior measures appear to be statistically linked to SCL change.

Limitations

The present approach is still in its infancy in the context of metaphor and counseling research. There are important limitations that can be addressed to varying extents in future work. Firstly, skin conductance reflects the intensity of emotional arousal but does not distinguish between

positive and negative emotions, or valence. It has however been suggested that experiencing and not avoiding negative emotions is an important aspect of counseling (Hayes, Wilson, Gifford, & Follette, 1996), which implies that both positive and negative affect contribute to engagement. Secondly, the study of spontaneous talk means that potential affective differences between metaphor reception and production cannot be teased apart. Both are seen as interwoven aspects of counseling interaction in the present study. Thirdly, the findings suggest that metaphorical language facilitates engagement over time but cannot for various reasons establish precise links between the quality of talk and quantity of skin conductance at any specific time point. Besides the potential confounds of a between-subjects design, there is the latency period in skin conductance response described earlier. It is also hard to conclude exactly what aspect(s) of metaphor drive arousal without more rigid experimental control (e.g. dictating how/for how long metaphors should be used). For example, metaphors might be more challenging to process, more compact, and/or more interesting. The required control measures would improve internal validity but with some cost to the spontaneity required for the present study. A final limitation on the applicability of the present findings is whether they could be generalized to more diverse affective situations in actual clinical settings. It was explained earlier that role-played participants are common in counseling research and justifiable in the present study. Compared to other things of interest, metaphor is also likely to be a 'common factor' (Frank, 1982) with relatively invariant effects across different contextual configurations in counseling. However, it could still be argued that the narrow focus on university students and academic problems underrepresents the far more diverse range of client types, issues, and counseling approaches in real life. Some examples of client demographics that are pertinent to both discourse and

counseling research include gender, age, and ethnicity, and whether they are matched or mismatched between counselors and clients. Future research could take these issues into account.

Implications and conclusions

The main theoretical implication of this study lies with its emphasis on an extended metaphorical communication style, which departs from the typical focus on specific metaphorical forms but more accurately represents actual counseling. The skin conductance and survey findings should motivate greater attention to this level of operationalization in metaphor and counseling theory, research, and practice. The discourse analytic findings also helped to uncover key components that characterize the metaphorical style in more concrete terms. Future discourse analytic work should go beyond the contents of metaphors and consider how they are inflected in various ways by these co-textual elements like signals, hedges, and so on. This would considerably expand how researchers currently define metaphor-related variables, and also inform intervention-oriented work like metaphor usage protocols. Many existing protocols, for example, focus exclusively on notions like 'images' and 'associations' generated by metaphors (Kopp & Craw, 1998; Sims, 2003), but not on how subtle linguistic nuances may influence these.

In terms of practical implications, the results have i) shed light on temporal aspects of the affective efficacy of metaphor, and ii) provided initial evidence of how various 'building blocks' of metaphor contribute differently to affective engagement. Since affective advantages tied to the explicit introduction of a metaphor are not apparent in the short term, counselors may find it useful to develop practical skills in metaphor elaboration over an extended period. These include learning how to go beyond 'stock metaphors' to probe source domain inferences, map these

inferences back to the target, and manage different scenarios of metaphor diversion, all while involving clients in an unfolding collaborative process. Greater awareness of these skills could be raised with more collaborative training activities between discourse analysts and counselors, which in their present form still tend to emphasize the initial stages of metaphor identification. This echoes Cameron et al. (2009)'s astute observation that metaphor use in the social world is better construed as 'metaphorizing' rather than the static object of 'metaphor'. Lastly, the discourse analysis raised the underexplored possibility that different building blocks of a metaphorical style contribute differently to affective engagement. The following tentative hypotheses were implied, all of which could be investigated in more specific ways: i) sources are more important drivers of affect than targets, ii) explicit signalling of metaphor and uncertainty expression related to metaphorical inferencing drive affect, and iii) greater interactional activity occurs under a metaphorical communication style. Affirmative results would be translatable to concrete communication guidelines for counselors, such as emphasizing source concepts, signalling metaphors more explicitly, and encouraging a more exploratory approach to metaphorical inferencing.

References

Ahammed, S. (2010). Applying Qur'anic metaphors in counseling. *International Journal for the Advancement of Counselling*, *32*(4), 248–255.

Blenkiron, P. (2010). *Stories and Analogies in Cognitive Behaviour Therapy*. West Sussex: John Wiley & Sons.

Boeynaems, A., Burgers, C., Konijn, E. A., & Steen, G. J. (2017). The Effects of Metaphorical Framing on Political Persuasion: A Systematic Literature Review. *Metaphor and Symbol*, *32*(2), 118–134. https://doi.org/10.1080/10926488.2017.1297623

Braithwaite, J., Watson, D., Jones, R., & Rowe, M. (2015). *A Guide for Analysing Electrodermal Activity (EDA) & Skin Conductance Responses (SCRs) for Psychological Experiments*. Birmingham.

Brennan, S. E., & Clark, H. H. (1996). Conceptual pacts and lexical choices in conversation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *22*(6), 1482–1493. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8921603

Cacioppo, J., Tassinary, L., & Berntson, G. (Eds.). (2007). *Handbook of Psychophysiology* (3rd ed.). New York: Cambridge University Press.

Cameron, L. (2008). Metaphor and talk. In R. W. Gibbs (Ed.), *The Cambridge Handbook of Metaphor and Thought* (pp. 197–211). Cambridge: Cambridge University Press.

Cameron, L., & Deignan, A. (2003). Combining large and small corpora to investigate tuning devices around metaphor in spoken discourse. *Metaphor and Symbol*, *18*(3), 149–160.

Cameron, L., & Maslen, R. (Eds.). (2010). *Metaphor Analysis*. London, UK: Equinox.

Cameron, L., Maslen, R., Todd, Z., Maule, J., Stratton, P., & Stanley, N. (2009). The discourse dynamics approach to metaphor and metaphor-led discourse analysis. *Metaphor and Symbol*, *24*(2), 63–89.

Cardillo, E. R., Schmidt, G. L., Kranjec, A., & Chatterjee, A. (2010). Stimulus design is an obstacle course: 560 matched literal and metaphorical sentences for testing neural hypotheses about metaphor. *Behavior Research Methods*, *42*(3), 651–664.

Cirillo, L., & Crider, C. (1995). Distinctive therapeutic uses of metaphor. *Psychotherapy*, *32*, 511–519.

Citron, F., & Goldberg, A. (2014). Metaphorical Sentences Are More Emotionally Engaging than Their Literal Counterparts. *Journal of Cognitive Neuroscience*, *26*(11), 2585–2595.

Dawson, M. E., Schell, A. M., & Filion, D. L. (2007). The Electrodermal System. In J. Cacioppo, L. Tassinary, & G. Berntson (Eds.), *Handbook of Psychophysiology* (3rd ed., pp. 159–181). New York: Cambridge University Press.

Du-Babcock, B., & Tanaka, H. (2013). A Comparison of the Communication Behaviors of Hong Kong Chinese and Japanese Business Professionals in Intracultural and Intercultural Decision-Making Meetings. *Journal of Business and Technical Communication*, *27*(3), 263–287. Retrieved from http://www.scopus.com/inward/record.url?eid=2-s2.0-84878548773&partnerID=40&md5=abbf2efdbcdc6c892b4e90a1a12dc72c

Dwairy, M., & Van Sickle, T. D. (1996). Western psychotherapy in traditional arabic societies. *Clinical Psychology Review*, *16*(3), 231–249.

El Refaie, E. (2001). Metaphors we discriminate by : Naturalized themes in Austrian newspaper

articles about asylum seekers. *Journal of Sociolinguistics*, *5*(3), 352–371. https://doi.org/10.1111/1467-9481.00154

Frank, J. D. (1982). Therapeutic components shared by all psychotherapies. In J. H. Harvey & M. M. Parks (Eds.), *The Master Lecture Series: Vol. 1 Psychotherapy Research and Behavior Change* (pp. 5–38). Washington, DC: American Psychological Association.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School Engagement: Potential of the Concept, State of the Evidence. *Review of Educational Research*, *74*(1), 59–109. https://doi.org/10.3102/00346543074001059

Geeraerts, D., & Grondelaers, S. (1995). Looking back at anger: cultural traditions and metaphorical patterns. In J. R. Taylor & R. E. MacLaury (Eds.), *Language and the Cognitive Construal of the World* (pp. 153–180). Berlin and New York: Mouton de Gruyter.

Ginicola, M. M., Smith, C., & Trzaska, J. (2012). Counseling Through Images: Using Photography to Guide the Counseling Process and Achieve Treatment Goals. *Journal of Creativity in Mental Health*, *7*(4), 310–329.

Glucksman, M., Quinlan, D., & Leigh, H. (1985). Skin conductance changes and psychotherapeutic content in the treatment of a phobic patient. *British Journal of Medical Psychology*, *58*, 155–163.

Goatly, A. (1997). *The Language of Metaphors*. London, UK: Routledge.

Hayes, S. C., Wilson, K. G., Gifford, E. V, & Follette, V. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology*, *64*(6), 1152–1168.

Holmgreen, L. L. (2008). Biotech as “biothreat”?: Metaphorical constructions in discourse. *Discourse and Society*, *19*(1), 99–119.

Horvath, A., & Greenberg, L. (1994). *The Working Alliance: Theory, Research and Practice*. New York: Wiley.

Jarosz, A. F., & Wiley, J. (2014). What Are the Odds? A Practical Guide to Computing and Reporting Bayes Factors. *Journal of Problem Solving*, *7*, 2–9. https://doi.org/10.7771/1932-6246.1167

Jeong, S. (2008). Visual Metaphor in Advertising: Is the Persuasive Effect Attributable to Visual Argumentation or Metaphorical Rhetoric? *Journal of Marketing Communications*, *14*(1), 59–73. https://doi.org/10.1080/14697010701717488

Jia, L., & Smith, E. R. (2013). Distance makes the metaphor grow stronger: A psychological distance model of metaphor use. *Journal of Experimental Social Psychology*, *49*(3), 492–497. https://doi.org/10.1016/j.jesp.2013.01.009

Kopp, R. R., & Craw, M. J. (1998). Metaphoric language, metaphoric cognition, and cognitive therapy. *Psychotherapy*, *35*(3), 306–311.

Kövecses, Z. (2000). *Metaphor and Emotion*. Cambridge, UK: Cambridge University Press.

Kövecses, Z. (2005). *Metaphor in Culture: Universality and Variation*. Cambridge: Cambridge University Press.

Kövecses, Z. (2015). *Where Metaphors Come From. Reconsidering Context in Metaphor*. Oxford and New York: Oxford University Press.

Kuhlen, A. K., & Brennan, S. E. (2013). Language in dialogue: When confederates might be

hazardous to your data. *Psychonomic Bulletin and Review*, *20*(1), 54–72. https://doi.org/10.3758/s13423-012-0341-8

Lakoff, G. (1993). The contemporary theory of metaphor. In A. Ortony (Ed.), *Metaphor and Thought* (2nd ed., pp. 202–251). Cambridge: Cambridge University Press.

Lakoff, G., & Kövecses, Z. (1987). The cognitive model of anger inherent in american english. In D. Holland & N. Quinn (Eds.), *Cultural Models in Language and Thought* (pp. 195–221). Cambridge: Cambridge University Press.

Levin, F. M. (1980). Metaphor, affect, and arousal: How interpretations might work. *The Annual of Psychoanalysis*, *8*, 231–245.

Levitt, H., Korman, Y., & Angus, L. (2000). A metaphor analysis in treatments of depression: Metaphor as a marker of change. *Counselling Psychology Quarterly*, *13*(1), 23–35.

Lyddon, W. J., Clay, A. L., & Sparks, C. L. (2001). Metaphor and change in counselling. *Journal of Counseling & Development*, *79*(3), 269–274.

Marci, C. D., Ham, J., Moran, E., & Orr, S. P. (2007). Physiologic correlates of perceived therapist empathy and social-emotional process during psychotherapy. *The Journal of Nervous and Mental Disease*, *195*(2), 103–111.

Mathieson, F., Jordan, J., Carter, J. D., & Stubbe, M. (2015). The metaphoric dance: co-construction of metaphor in cognitive behaviour therapy. *The Cognitive Behaviour Therapist*, *8*, e24.

Matthews, M., Gay, G., & Doherty, G. (2014). Taking part: role-play in the design of therapeutic systems. In *Proceedings of the SIGCHI Conference on Human Factors in Computing*

Systems (pp. 643–652). New York: ACM.

McMullen, L. M. (1996). Studying the use of figurative language in psychotherapy: the search for researchable questions. *Metaphor and Symbolic Activity*, *11*(4), 241–255.

McMullen, L. M. (2008). Putting it in context: Metaphor and psychotherapy. In R. W. Gibbs (Ed.), *The Cambridge Handbook of Metaphor and Thought* (pp. 397–411). Cambridge: Cambridge University Press.

Nerlich, B., & Jaspal, R. (2012). Metaphors We Die By? Geoengineering, Metaphors, and the Argument From Catastrophe. *Metaphor and Symbol*, *27*(2), 131–147. https://doi.org/10.1080/10926488.2012.665795

Norcross, J. C. (1990). An eclectic definition of psychotherapy. In J. K. Zeig & W. M. Munion (Eds.), *What is Psychotherapy? Contemporary Perspectives* (pp. 218–220). San Francisco, CA: Jossey-Bass.

Prince, E., Frader, J., & Bosk, C. (1982). On hedging in physician-physician discourse. In R. J. di Pietro (Ed.), *Linguistics and the Professions* (pp. 83–97). Norwood, NJ: Ablex.

Robinson, J. W., Herman, A., & Kaplan, B. J. (1982). Autonomic responses correlate with counselor-client empathy. *Journal of Counseling Psychology*, *29*(2), 195–198.

Sarpavaara, H., & Koski-Jännes, A. (2013). Change as a Journey-Clients' Metaphoric Change Talk as an Outcome Predictor in Initial Motivational Sessions with Probationers. *Qualitative Research in Psychology*, *10*(1), 86–101.

Sims, P. A. (2003). Working with metaphor. *American Journal of Psychotherapy*, *57*(4), 528–536.

Steen, G. (2011). The contemporary theory of metaphor - now new and improved! *Review of Cognitive Linguistics*, *9*(1), 26–64.

Stevens, R., & Spears, E. H. (2009). Incorporating photography as a therapeutic tool in counseling. *Journal of Creativity in Mental Health*, *4*(1), 3–16.

Stott, R., Mansell, W., Salkovskis, P., Lavender, A., & Cartwright-Hatton, S. (2010). *Oxford Guide to Metaphors in CBT. Building Cognitive Bridges.* Oxford and New York: Oxford University Press.

Tay, D. (2013). *Metaphor in Psychotherapy. A Descriptive and Prescriptive Analysis.* Amsterdam and Philadelphia: John Benjamins.

Tay, D. (2014). An analysis of metaphor hedging in psychotherapeutic talk. In M. Yamaguchi, D. Tay, & B. Blount (Eds.), *Approaches to Language, Culture, and Cognition* (pp. 251–267). Basingstoke, UK: Palgrave MacMillan.

Tay, D. (2016). Finding the Middle Ground between Therapist-Centred and Client-Centred Metaphor Research in Psychotherapy. In M. O'Reilly & J. N. Lester (Eds.), *The Palgrave Handbook of Adult Mental Health* (pp. 558–576). London: Palgrave Macmillan.

Thompson, S. J., Bender, K., Lantry, J., & Flynn, P. M. (2007). Treatment Engagement: Building Therapeutic Alliance in Home-Based Treatment with Adolescents and their Families. *Contemporary Family Therapy*, *29*(1–3), 39–55.

Wagenmakers, E. J. (2007). A practical solution to the pervasive problems of p values. *Psychonomic Bulletin and Review*, *14*(5), 779–804. https://doi.org/10.3758/BF03194105

Wickman, S. A., Daniels, M. H., White, L. J., & Fesmire, S. A. (1999). A "primer" in conceptual

metaphor for counselors. *Journal of Counseling & Development*, *77*, 389–394.

Yu, N. (2008). *The Chinese heart in a cognitive perspective. Culture, body, and language*. Berlin and New York: Mouton.