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## **Metaphors and why these are important in all aspects of genetic counseling**

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### **Abstract**

Metaphors appear simple but are fundamental schemata allowing expression and processing of complex emotions and information. They are so embedded in language and thinking that we are often unaware of their impact, despite the crucial role of metaphors in communication, learning and creating meaning from experiences. A deeper understanding of how to recognize and work with client-generated and counselor-generated metaphors has great potential as an addition to the genetic counseling “tool-box”. Here we draw on studies from related health and psychotherapy fields to discuss how working purposefully with metaphors may offer a powerful way to enhance communication within a reciprocally engaged client-counselor relationship. Metaphors present ways to explain complex genetic concepts in a **This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the [Version of Record](#). Please cite this article as [doi: 10.1002/JGC4.1463](https://doi.org/10.1002/JGC4.1463)**

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personally meaningful form, to gain a deeper understanding of client's experiences and emotions, to assist processing of experiences, emotions and concepts, and to assist client and counselor to access and reflect on subconscious emotions, self-concept and motivations. In addition, working with metaphors has been shown to facilitate coping and action. This paper sets the scene for why and how genetic counselors can utilize client-generated and counselor-generated metaphors purposefully in all areas of practice, including enhancing the therapeutic interaction with clients, as well as in supervision, training, cultural competence, and shaping of societal attitudes towards genetics.

**Keywords:** metaphor; schemata; counseling techniques; communication; language; lived experience; genetic counseling; psychosocial

### **Introduction**

Metaphors are figures of speech used extremely frequently in everyday language, thoughts and actions (Lakoff and Johnson, 1980). Metaphors appear simple but are fundamental schemata allowing expression and processing of complex emotions and information. Metaphorical language, including simile as a more explicit form, is recognized as having an important role in communication, learning, and understanding the world (Lakoff & Johnson, 1980; Ricoeur, 2003). Although metaphor is so embedded in language and thinking that we are often unaware of its impact, use of metaphor is recognized as a valuable tool in research, theory and practice in related fields of psychotherapy, education, linguistics, cancer care, palliative care, pain management and counseling (Gallagher, MacAuley, & Moseley, 2013; Hommerberg, Gustafsson, & Sandgren, 2016; Killick, Curry, & Myles, 2016; Moser, 2000; Spall, Read, & Chantry, 2001; Wagener, 2017) but has received little attention in genetic counseling aside from explanations for genes. These abstract mental models draw on prior experience which can be overlaid onto a new experience to enable relatable expression of feelings and to organize cognitive processing. Working purposefully with metaphors may offer a powerful way to enhance communication within a reciprocally engaged client-counselor relationship, explain complex genetic concepts in a personally meaningful form, gain a deeper understanding of client's experiences and emotions, assist processing of experiences, emotions and concepts, assist client and counselor to access and reflect on subconscious emotions, self-concept and motivations, and facilitate coping and action. This paper sets the scene for why and how genetic counselors can utilize client-generated and counselor-generated metaphors purposefully in all areas of practice, including enhancing the therapeutic interaction with clients in both psychosocial and genetic education

aspects as listed above, as well as a brief overview on considering metaphor in supervision, training, and shaping of societal attitudes towards genetics. We refer to metaphor theory and relevant discussion papers and empiric studies from related health and psychotherapy fields.

Metaphors are defined as figures of speech in which a word or phrase is used to represent or symbolize something else and is not literally applicable (Lakoff & Johnson, 1980; Ricoeur, 2003). In each metaphor, there is a source domain - the known area/understanding, often physical, conveyed by the words or phrase, and the target domain – the new experience, often emotional or cognitive, to which the mental map of the source domain is being applied as a comparison, anchor or reference (Lakoff & Johnson, 1980). Examples from genetics include “*gene mapping*” using a cartographic metaphor, or various counselor-generated information metaphors about genes (for review see Nelkin, 2001) including “*instructions; codes; books; library; recipes*” and the more outdated “*blueprint*”. Additionally, although few studies have specifically investigated client-generated metaphors in genetic counseling, many metaphors are frequently heard in relation to emotions such as “*a ticking time bomb [a genetic predisposition]*”, “*[the genetic diagnosis process] has been a rollercoaster*”, “*a weight has been lifted*” or about decision-making such as “*knowledge is power*”. Metaphor typology includes structural, orienting, ontological, and new metaphors, and have common source domains such as objects, substances, journeys, seeing, war, madness, food, buildings, and physical orientations (Lakoff & Johnson, 1980). Metaphor uses these familiar source domains to map new or more abstract concepts such as love, time, health, happiness, arguments, morality, and ideas (Lakoff & Johnson, 1980). Some examples are provided in Table 1.

### **Metaphors in communicating genetic information**

Communicating genetic information requires explanation of abstract concepts about which the client may have little pre-existing knowledge. Conveying genetic information is an important part of facilitating informed choices and consent for testing, and involves translating medical/scientific jargon into everyday terminology tailored for each individual and their personal, familial and cultural context. Metaphors help by mapping a schema from a familiar concept onto the new concept, aiding in organisation and cognitive processing of the information (Lakoff & Johnson, 1980; Steger, 2007). Research has shown that metaphors can capture attention differently from person to person – for example, a thematic analysis of interviews about beliefs about genetics found that popular culture is a rich source of

narratives and metaphors for people to draw on when articulating thoughts and feelings about genetics (Roberts, Archer, DeWitt, & Middleton, 2019). Genetic counselors are skilled at building rapport and varying communication style in a client-centred way, therefore paying attention to client-generated metaphors fits with this approach and may deepen the connection. Metaphors which are easy to remember through association with a familial topic (source domain) may also help clients subsequently relay genetic information to their relatives. Metaphors have been frequently used in providing genetic information, however, multiple reports have argued that metaphors about blueprints, recipes, molecular pathways or machines (eg. Cells as “*factories*”) are inadequate and misleading and have created negative connotations or constraints for science culture including oversimplification, determinism, and misunderstood concepts/assumptions about linear relationships between cause and effect (Armstrong, 2017; Condit et al., 2002; Pigliucci & Boudry, 2011; Taylor & Dewsbury, 2018). Therefore, it is important to understand and communicate the limitations of a metaphor and consider using several smaller scale metaphors to reflect complexity and present different perspectives on the same information. Interestingly, a systematic analysis of metaphors for epigenetics in UK newspapers, whilst finding metaphors with clear source domains such as “*musical score; electrical switch; transgenerational memory*” also found a lack of overarching ‘grand’ metaphors because it is difficult to clearly pinpoint the target domain, highlighting epigenetics as a topic about which communication remains challenging (Stelmach & Nerlich, 2015). It should be noted that visual metaphors, where an image is understood to represent something else, are also frequently used to convey genetic information, however due to constraints on scope, the interesting topic of visual metaphors will not be further addressed here.

### **Metaphors in enhancing communication about emotions and psychosocial aspects of genetic counseling**

Metaphors are an essential element of psychosocial counseling and attending to client and counselor-generated metaphors can enhance the client-counselor relationship and therefore the quality of psychosocial care (Harrington, 2012; Killick et al., 2016). This is consistent with the goals of the reciprocal-engagement model of genetic counseling where the relationship is key (Veach, Bartels, & Leroy, 2007). An interview study by Leite et al. (2016) on illness representations of being at risk of neurogenetic conditions highlighted that “It was in the metaphors that the subjects best expressed what they felt regarding the disease and the

situation of being at-risk for this disease” (p.87). A few of the common source domains for the metaphors in that study included “obstacle”, “something very bad” and “nightmare” (Leite, Dinis, Sequeiros & Paul, 2016, p.86). Within a trusting and effective client-counselor relationship, metaphors can be used to help explore and link informational and emotional components of complex concepts (Wagener, 2017). In genetic counseling this is especially important in making connections between the genetic information and the personal relevance to the individual and their family. Examples of metaphors frequently heard in relation to dilemmas about informing relatives of a genetic health risk are that telling them may “*open a can of worms*” or that some relatives would be “*open to it*” while others “*shut it down*” or “*have their head in the sand*”. Clients often express worry about “*giving*” their relative(s) “*a weight to carry*” (or similar metaphors relating to a *burden* or *heavy* knowledge) and conversely wish to “*protect*” them.

Metaphors can enable a client to express complex, sensitive or taboo feelings and experiences, whilst providing some distance from distressing emotions, as shown in studies on death and dying or dementia (Hommerberg et al, 2016; Johannessen, Engedal, & Thorsen, 2015) (also see Table 1). For example, from our own practice, during a genetic counseling session a client learning of his diagnosis with Huntington disease said in relation to his memory and cognitive symptoms that “*it feels like a worm is eating holes in my brain*”. This communicated complex feelings relating to changes that were difficult to verbalize, including his awareness of loss, fear, and a process beyond his control. Clients often use journey metaphors to talk about the sensitive topic of death such as “*passed away*” or suicidal ideation such as “*I was in a dark place*”, and euthanasia/assisted dying such as “*having an exit strategy*” or “*checking out*”, thereby avoiding directly verbalising the thought and providing a cue to find out whether the counselor is comfortable to address it or not. Use of unusual metaphors indicates struggle to process the situation, information or emotions, and suggests that the client may benefit from more help before being ready to act on the problem/experience (Gelo & Mergenthaler, 2012; Wagener, 2017). For example, a client of about age 30 who had known about a 50% risk of Huntington disease (HD) for many years and was now considering testing expressed “*I’ve been in the tall grass for a long time*”, at once conveying past ambivalence, isolation and uncertainty and perhaps a sense of being ambushed or overwhelmed, and also conjures other journey metaphors including being “*stuck*”, “*lost*”, unable to plan for the future, perhaps being alone, and lacking “*a clear path*”. Metaphors can provide access to subconscious thoughts and feelings (Lakoff &

Johnson, 1980; Steger, 2007), and the tall grass metaphor above likely reflected multiple complex conscious and subconscious thoughts and experiences of being at 50% risk. Another client, who was struggling to process a negative predictive HD result and had unexpectedly been feeling angry about insignificant problems, said “*the lid has been taken off*”, as a way to explain his perspective shift now that the possibility of HD was not there. Another couple, trying to process a new HD diagnosis and the uncertainty of what the future might hold, expressed many thoughts, feelings and worries with the metaphor “*what we need now is a hug from the medical system - we need the medical system to put its arms around us*”.

### **Metaphors in supporting positive changes in behaviour, self-concept and thinking**

Following on from the above discussion of metaphors as having a central role in expressing and linking emotions, thoughts and experiences, metaphors can facilitate problem-solving, action, and positive changes in behaviour or thinking (Chan, Paletz, & Schunn, 2012; Hu, Zhang, Zhang, Yu, & Zhang, 2018; Moser, 2000). Therapeutic approaches including metaphors can be powerful tools for supporting change or action as these often reflect subconscious activation of motives and goals (Chan et al., 2012; Moser, 2000; Thibodeau & Boroditsky, 2013). For example, a “*tree of life*” metaphor has been successfully used in structuring narrative therapy group sessions for people adapting to predictive genetic results for Huntington disease (MacLeod, Moldovan, Stopford & Ferrer-Duch, 2018; Stopford, Ferrer-Duch, Moldovan, & MacLeod, 2020). Use of stories as metaphors can be less threatening than directly confronting the issue or the action required, and can ‘tag’ the memory and seed ideas (Cohen, 2018).

Client-generated metaphors can be expanded with prompting from the counselor, for further exploring the core message and the context for both counselor and client. For example, metaphors expressing self-concept, can be developed or changed, and may contain multiple layers of self-concept expressed at levels of culture, social role and individuality, as well as ideal and actual self (Killick et al., 2016; Moser, 2000; Steger, 2007; Wagener, 2017). Genetic information can sometimes be perceived as a threat to self-concept (Klitzman, 2009; McConkie-Rosell, Spiridigliozzi, Melvin, Dawson, & Lachiewicz, 2008). By attending to metaphors that relate to self-concept a genetic counselor may be able to help a client to achieve a shift in framing and perspective. To the extent that this can be realized within a framework consistent with a single-session narrative therapy approach, it may allow the

client to attach new meaning to past experience, worldview and self-concept, with each retelling of a personal story. A randomized controlled trial of a cognitive narrative therapy intervention with metaphorization as a key component in the meaning-making process demonstrated reduced anxiety and depression for women who had a prenatal diagnosis and termination of pregnancy (Rocha et al., 2018). Adapting a client-generated metaphor through the client-counselor interaction can reformulate the metaphor to support positive change (Gelo & Mergenthaler, 2012 ; Rocha et al., 2018; Tay, 2012; Wagener, 2017).

### **Metaphors in supervision and training**

In supervision and training in genetic counseling, metaphors used by the supervisee may be expressing the complexities of their role and the goals, thoughts, feelings and dilemmas encountered. Supervisors can listen for metaphors and ask the supervisee to expand on the source and target domains or the concepts linking those. Examples include “conveying *warmth*; “*sitting/staying with difficult emotions*”, “*burnout*”, and metaphors expressing self-esteem/self-concept/confidence as a genetic counselor. Journey metaphors such as a supervisee expressing that they felt “*stuck*” in a session can be utilized by the supervisor and supervisee to explore further, through questions such as “*How were things travelling until then? Were there any forks in the road? What were the road blocks at that “stuck” point? What direction would you have liked the session to go in? What was the end point you ideally would have liked to reach? What might have helped to move forward? How do you think this matches with the journey that the client might be on?*”. In addition, supervisees might reflect with their supervisors on client-generated metaphors from challenging or emotional sessions, as a way to gain deeper insight into the client experience, client-counselor communication, and issues of transference or countertransference.

### **Considering metaphors about genetics at cultural and societal levels**

Cultural and social understanding of genetics can be significantly affected by the use of specific metaphors, particularly emotive metaphors or those with frightening or religious connotations. Critical consideration and awareness of potentially negative messages in common metaphors, such as stereotypes, deterministic implications, or misunderstandings is important (Condit et al., 2002; Pigliucci & Boudry, 2011; Taylor & Dewsbury, 2018). Framing of a message or concept can change interpretation, for example shifting from a

perception of stigma to challenge (Smith, 2007), and metaphors are an important way of framing. For example, consider the obvious example of metaphors for prenatal or preimplantation genetic testing such as “*designer babies; playing God*” where there are negative connotations related to the source domains of treating babies as designer goods, parents as shoppers, scientists as creating babies, using their power to create perfect humans. These simple metaphors conjure a whole range of related scenarios and fears about ethics, regulation, eugenics and dystopian fears about the future. In contrast, battle metaphors relating to disease as an enemy to fight, or a progress to be made include “*a step forward in the fight against disease*” implies a different set of connotations and implicit motivations (Mattiello, 2019).

A limitation of grand metaphors as well as smaller metaphors are that they may not have the same relevance in different cultures. For example, a study of narratives of Malay women with cancer found that metaphors relating to cancer as an object (a heavy object, an unwanted object, or a gift) were prominent, compared with the war and journey metaphors reported more frequently in other cultural settings (Mohd Jamil, Md Rashid, & Kasim, 2019). Western medicine frequently uses metaphors relating to *the body as a machine, battles against illness, and the body or mind as a communication system*, whereas Chinese medicine may refer to *flow/blockage, balance/imbalance*, and refer to *elements of wood, fire, earth, metal, and water* (Hanne, 2015). In another example, a metaphor analysis of doctor-client communication regarding mental health found that using English-language directional metaphors referring to symptoms of mania or depression as *up* or *down*, or metaphors relating to the body as a container by referring to depression as *emptiness*, caused confusion for Spanish-speakers (Magana, 2018). Joseph et al. (2017) similarly studied mismatches between genetic counselor communication and patient understanding/needs and found that whilst genetic counselors frequently used analogies such as explaining sequencing as a spellcheck, sometimes there was no cultural or linguistic equivalent, causing confusion. Advancing knowledge of culturally understood metaphors through future genetic health research will be crucial in ensuring an inclusive approach at cultural and societal levels as well as at individual and family levels. This will help to ensure that information booklets and other resources are culturally appropriate.

### **Metaphors and their potential in genetic counseling research**

In genetic counseling research, discourse analyses including metaphor analyses has potential to provide insight into client experiences and how those are processed and expressed, the impact of genetic counseling, and the effectiveness of communication and counseling strategies. Cameron and Maslen (2010, p.1) highlight metaphor as “a multi-dimensional discourse phenomenon that involves language, thinking, physicality and social interaction” which can be used to “reveal more about how people think and feel”. Methods of metaphor analyses include qualitative and quantitative approaches involving identifying metaphors, categorising according to common source domains, and quantifying how often each are used and by whom, enabling correlations with demographics such as gender, role, or other contexts (Cameron & Maslen, 2010; Moser, 2000). Rigorous methods, such as those grounded in Conceptual Metaphor Theory (Lakoff & Johnson, 1980) with attention to clear study question(s), defined criteria, and reproducible metaphor identification and categorisation are required (Cameron & Maslen, 2010; Moser, 2000; Praggeljat Group, 2007; Schmitt, 2005). Systematic metaphor analysis is a methodology with potential for micro-analysis of genetic counseling interactions and client experiences, and media representations of genetics, and has maximum value when used in combination with other methods for triangulation (Schmitt, 2005). Metaphor-based research has strong potential to gather evidence to help improve genetic counseling practice.

## Conclusions

In conclusion, data from fields of psychology and counseling demonstrate how important, powerful and useful metaphors are, and here we have outlined the many ways in which metaphors are relevant to genetic counseling. Whilst appearing simple, metaphors act as “a bridge so clients’ internal worlds can be shared with the counselor” (Wagener, 2017, p.153). Training for genetic counselors can include how to identify and utilize client-generated and counselor-generated metaphors for translating genetic information to clients and for enhancing psychosocial care. Purposefully noticing client-generated metaphors, and reflecting and expanding on these metaphors has potential to enhance communication in a personally meaningful way, in turn strengthening the efficacy of the reciprocal relationship between client and counselor. It is also important for genetic counselors to be aware of the limitations of figurative language, as many metaphors have limited ability to convey/understand/map to the target domain. They may subconsciously impose a specific framing upon a topic by highlighting some aspects while minimising other aspects. In some instances, there may be value in pointing out assumptions contained within a metaphor and

suggesting an alternative figurative description for the same idea. Metaphors can be interpreted in different ways by different individuals, and should be used with cultural awareness, and an explanation of biases. Increasing diversity and inclusion in the workforce will lead to improvements in practice with culturally and linguistically diverse clients (Channaoui et al., 2020), including development of specific resources and verbal strategies containing metaphors for genetic concepts. Further research is needed to gather evidence on how to work effectively with metaphors in various areas of genetic counseling, in the context of achieving various psychosocial and educational outcomes, and this includes not only verbal/textual metaphors but visual metaphors as well.

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### **Conflict of Interest**

A.Sexton and P.James declare they have no conflict of interest.

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Table 1. Examples of metaphors relevant to counseling and health care.

Metaphor	Example	Reference
Illness is a journey	<i>"I want to climb off but there is no stop button"</i>  <i>[Dementia, from viewpoint of carers] is a journey of no return</i>  <i>There is a bumpy road ahead</i>  <i>I'll take one step at a time and get through this</i>	Hommerberg et al., 2020 p. 62  Zimmerman, 2017 (Common examples)
Illness is a battle	<i>"I will fight to the last drop of blood"</i>  <i>"I have in a way already given up"</i>  <i>"The disease was an aggressive opponent I had to fight"</i>	Hommerberg et al., 2020 p. 62; Gibbs & Franks, 2002 p.150
Illness is a heavy object	<i>"I've been carrying this burden for years now"</i>	Hommerberg et al., 2020 p. 62
Illness is a teacher	<i>"The disease has taught me many things about myself"</i>	Gibbs & Franks, 2002 p.150
Time is money (time is a limited resource/valuable commodity)	<i>I don't want to spend time on that</i>  <i>I'm running out of time</i>  <i>Is that worth your while?</i>  <i>Living on borrowed time</i>  <i>That cost me a lot of time</i>	Lakoff & Johnson, 1980
The mind is a machine	<i>I'm a little rusty</i>  <i>The wheels are not turning properly today</i>  <i>I had a breakdown</i>	Lakoff & Johnson, 1980
Emotions are liquid or pressure in a container	<i>I'm at boiling point</i>  <i>My mind is about to explode</i>  <i>Letting off steam</i>  <i>I'm overflowing with happiness</i>	(Common examples)
Love is a patient	<i>A strong healthy relationship</i>  <i>Their marriage is on its last legs</i>  <i>We're getting back on our feet</i>	Lakoff & Johnson, 1980
Love is a	<i>I could feel the electricity between us</i>	Lakoff & Johnson,

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physical force	<i>His life revolves around her</i> <i>There were sparks</i>	1980
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