Review Article

Hypnosis in palliative care: from clinical insights to the science of self-regulation

Mathieu Landry[1,2], Moriah Stendel[2,3], Michel Landry[4], Amir Raz[1,2,3,5]

[1]Montreal Neurological Institute, McGill University, Montreal, Canada; [2]Institute for Interdisciplinary Behavioral and Brain Sciences, Chapman University, Irvine, CA, USA; [3]Lady Davis Institute for Medical Research & Institute for Community and Family Psychiatry, Jewish General Hospital, Montreal, Canada; [4]Centre de Consultation Psychologique et d'Hypnose Clinique, Montreal, Canada; [5]Departments of Psychiatry, Neurology & Neurosurgery, and Psychology, McGill University, Montreal, Canada

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Correspondence to: Mathieu Landry. Montreal Neurological Institute, McGill University, Montreal, QC, Canada.
Email: mathieu.landry2@mail.mcgill.ca.

Abstract: Palliative care spans a wide-ranging spectrum: from pain-management to spiritual support. As the demand for end-of-life care increases, so does the demand for innovative, effective, interventions. Mind-body techniques seem especially advantageous in a palliative context. Here we show that hypnosis serves an excellent adjunct therapy in palliative care to boost the efficacy of standard treatments. With the overarching goal of bridging clinical and scientific insights, we outline how five core principles of hypnosis can benefit the diverse needs of palliative care.

Keywords: Palliative care; hypnosis; clinical application

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Introduction

The growing demand for palliative care represents a challenging medical context for health professionals. On the one hand, clinicians are first and foremost called upon to deliver a reliable medical strategy to manage primary symptoms (1). This line of intervention is qualitatively similar to other medical acts in that it largely rests on the medical skills of practitioners. On the other hand, palliative care often necessitates that medical teams address mental ailments such as psychological distress, acute anxiety, and depression (2). These afflictions impose an extensive burden on the overall wellbeing of patients and their families and therefore require the efficient use of therapeutic interventions (3,4). Integrative medical approaches attempt to harmonize medical and psychological care in an effort to meet such challenges. However, these coordinated interventions represent a complex balancing act where practitioners must consider idiosyncratic factors such as the trajectory of the illness, the medical and psychological history of the patient, their level of social and familial support, as well as their spiritual beliefs (5). These heterogeneous demands force clinicians to intervene at various levels concurrently.

Within the complex context of palliative care, hypnosis represents a substantial adjunct capable of boosting the efficiency of standard treatments (6). In particular, practitioners stand to benefit from using hypnotic interventions to improve clinical outcomes in both medical and psychological treatment. First, a large body of findings validates the efficiency of hypnotic interventions in the management of pain and physical discomfort (7-9). Hypnosis can reduce drug intake in pharmacological treatments and abate unpleasant side effects. Moreover, hypnosis represents a well-established add-on for enhancing the efficiency of psychotherapy intended to

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alleviate psychological distress, acute anxiety disorder, and depression (10-16). However, despite its potency and empirical grounding, clinical hypnosis remains largely underutilized in palliative care, likely as a consequence of largely misinformed views amongst medical practitioners. Beset by a history of charlatanism and folktales, hypnosis has yet to (re)gain prominence in mainstream medical and psychological practices, especially in comparison to the growing prevalence of contemplative practices (17). Here, we propose to tackle this enduring skepticism by cataloging some of the core psychological mechanisms that characterize the hypnotic response and by highlighting key empirical findings that inform our view. In this fashion, we hope to placate lingering doubts about the merits of hypnotic interventions in palliative care.

Our goals are twofold: first, to provide a reliable framework for understanding some of the core components of hypnosis, thereby informing prevailing models of hypnotic interventions in palliative medicine; second, to set the foundation for building bridges between intuitive clinical knowledge and scientific views of hypnosis. This second objective pertains to the particular issue of translating fundamental discoveries in the science of hypnosis into evidence-based clinical practices (12). While the gap between clinical and empirical knowledge impacts most of medicine (18), we sketch out how this hurdle represents a primary issue for the adoption of hypnosis as a favorable medical intervention. Our framework addresses this concern by closing the gap between prevailing clinical insights and the science of self-regulation.

The gap between clinical practice and fundamental research

Evidence-based medicine calls for health officials and medical practitioners to turn reliable medical findings into clinical practice (19). However, this endeavor presents many challenges (20). Hypnosis is no stranger to these challenges.

Scientists exploring hypnotic phenomena have mainly geared their efforts towards understanding the influence of inter-individual differences in hypnotic susceptibility, the role of the hypnotic induction, and the effects of hypnosis and post-hypnotic suggestions (21-24). This research is constantly spurring groundbreaking discoveries and innovative hypotheses (25), leading to new and insightful approaches for clinical interventions (26,27). And yet, various challenges remain in translating this research into safe and efficient practices. One such challenge concerns the near-absence of a strong, coherent, theoretical foundation of hypnosis (25,28,29). While experts largely subscribe to the idea that hypnotic phenomena involve the ability to produce a behavioral or mental response following a suggestion (30-32), theoretical debates about the nature of hypnosis have divided the field for more than 2 decades (33-36). These quarrels have predominantly centered on whether hypnosis represents an "altered state of consciousness". Some theories emphasize the role of phenomenology in generating reliable hypnotic responses (37), while others challenge this view (38). Yet others advocate for a more pragmatic scientific approach that would transcend these controversies and instead focus on the underlying mechanisms that enable the emergence of hypnotic phenomena (39,40). Consistent with this view, we plan to adopt this epistemic strategy and translate fundamental research into reliable clinical practice by underlining some of the mechanisms inherent to hypnotic response.

Scientific and applied approaches to hypnosis highlight philosophical differences between scientific and clinical methods. The structure of the scientific method requires researchers to adopt a standardized approach to hypnosis that is hardly customizable to inter-individual differences. In contrast, health professionals strive to adjust their strategies to the specificity of their patients and the therapeutic context (29,41). This disparity introduces a tension between the desire to develop a science that generalizes to an entire population and the need to develop personalized therapeutic tools adaptable to single cases. While this issue permeates the clinical realm as a whole, it remains particularly pervasive in the case of hypnosis where individuals are capable of using a wide variety of mental strategies to generate the hypnotic response (31,42,43). Hence, the rigor imposed by the scientific method does not correspond to the adaptability of clinical approaches. To be sure, clinicians using hypnosis often develop strong intuitions about ways to tweak their interventions in order to facilitate the process. These clinical insights mainly reflect the development of expertise for recognizing the emergence of certain response patterns and adjusting their intervention accordingly (44,45). How can we develop a science of hypnosis that properly accounts for such clinical skills? We propose to address this difficulty by emphasizing some of the core principles that typify a reliable hypnotic response. Highlighting these components can provide health care professionals with valid guidelines and afford them with sufficient flexibility to tailor interventions to specific patients and contexts.

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The science of hypnosis

In order to underline the central aspects of hypnosis, we must first situate them within the more general domain of the hypnotic procedure. The ritual of hypnosis typically involves two phases: induction and suggestion. The induction process includes a set of instructions intended to evoke a state of heightened attention and increased response preparation (46,47). Individuals undergoing hypnosis typically become mentally absorbed towards a certain mental object, and produce reliable responses to instructions (48-50). Distinct neural patterns involving the modulation of top-down control systems accompany this procedure (51-53). Suggestions form communicable representations—most often verbal—capable of prompting a mental or behavioral response (30). In particular, the hypnotic operator employs hypnotic and post-hypnotic suggestions to target specific perceptual, cognitive, emotional, or ideomotor processes (21,31,54). Evidence shows the centrality of suggestions in generating a reliable response (22,55-57). Together, induction and suggestion form an established procedure that offers clinicians the flexibility to customize: induction can maximize mental absorption, response preparation, and relaxation whereas suggestions generate a steadfast response. As a case in point, such bespoke customizations can come about as a function of authoritarian suggestions, as opposed to permissive ones (29). Clinicians practicing hypnosis must therefore determine the best adjustments to achieve the desired therapeutic and medical objectives.

Some scholars regard induction and suggestion as procedures on distinct conceptual planes (Barabasz & Barabasz, 2016) (58). For example, certain theories postulate that the induction yields an altered state of consciousness and the emergence of hypnotic phenomena (59). However, different arguments undermine the notion that induction and suggestions are conceptually distinct (60). First, both induction and suggestion rely on instructions that solely differ in content relative to their respective timing and purpose (61). Instructions during induction precede those of the suggestion phase and aim to enhance mental absorption and response preparation, while instructions of the suggestion phase ought to generate a specific hypnotic response. Second, various empirical findings highlight the prominent role of suggestions in producing the hypnotic response while downplaying the importance of hypnotic trance (22,56,57,62). Yet, dismissing the induction procedure altogether seems premature (46). The framework we are proposing posits that the induction and suggestion procedures represent different stages of the hypnosis process, each being largely defined by their respective objectives.

Five fundamental principles of hypnosis: Implications for palliative care

Equifinality

The principle of equifinality, which applies to hypnotic phenomena, states that different means can lead to the same end state. In other words, distinct cognitive strategies may lead individuals to achieve similar hypnotic responses (42). Supporting this view, mounting evidence highlights heterogeneity amongst individuals who are highly susceptible to hypnosis, thereby implying that reliable hypnotic responses may occur through several cognitive and phenomenological profiles (63-66). Evidence highlights how this heterogeneity cuts across several domains including cognitive strategies (67), cognitive functioning (65), and phenomenology (68). Compounded, these findings intimate that equifinality represents a central aspect of hypnosis, whereby different cognitive routes can produce similar hypnotic responses.

Brain-imaging experiments provide further evidence for equifinality. For example, comparing the modulation of pain in fibromyalgia with experimentally induced pain, a recent study unveiled similar effects at the subjective level, yet distinct neural patterns (69). In this experiment, individuals with fibromyalgia and controls received nociceptive stimulation alongside the same suggestion for regulating their subjective experience of pain. While both groups adjusted their subjective experience in a similar fashion, neuroimaging data show that they achieved it through different means. These findings extend previous work (70-75) showing that the hypnotic modulation of pain perception spans distinct neural pathways. Furthermore, the results show that context seems important in determining response, as the source of the experienced pain (fibromyalgia versus experimentally induced) led to different neural outcomes.

Support for equifinality also comes from cognitive neuroscience. For example, individuals can uniformly reduce pain, irrespective of whether they employ relaxation or de-personalization strategies (76). In the same vein, findings also highlight how direct or indirect hypnotic

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suggestions can achieve comparable outcomes by recruiting separate brain networks (77). Thus, evidence corroborates the notion that different cognitive strategies during hypnotic suggestions can converge on a single end state.

As a particular feature of hypnosis, equifinality allows healthcare professionals to customize their approach depending on the strategies that work best for the patient. Unlike pure scientists, practitioners must exercise substantial flexibility when they fashion their clinical approach. Given that hypnosis is so adaptable to the individual, one may argue that different "keys" are capable of "unlocking" a hypnotic response depending on the particular abilities and needs of the patient (41). In the context of palliative care, the characteristics, needs, and abilities of patients can vary tremendously—a challenge for rigid therapeutic and medical interventions (78). Equifinality affords hypnotic practitioners of palliative care with degrees of freedom, allowing them to explore different hypnotic strategies. Even when patients do have the same end goal, the hypnotic operator can structure hypnotic suggestions depending on the specific hypnotic abilities of the patient to achieve maximum benefit. These clinical interventions should notably take into account the specific context and the objectives of their patients and relies, at least in part, on the creativity and resourcefulness of the health care professional to achieve these goals (79). To attain these goals clinicians need to establish a strong therapeutic bond by pacing the process, welcoming and appreciating their difficulties, and leading them towards novel experiences relative to the health challenge they are currently facing.

Response preparation as a key predictor of hypnotic response

Expectations fundamentally shape our experience of the world (80-89), and this wide-ranging influence encompasses hypnotic phenomena where expectations influence the quality of hypnotic responses (40). We can observe this overarching influence across several dimensions. Evidence shows how preparing participants, by either using hypnosis-related terminology or providing information about hypnosis, enhances hypnotic susceptibility (90,91). This key finding likely hinges on sociocultural expectations, where individuals anticipate that hypnosis will trigger profound changes in conscious experience, leading them to respond in concordance with such expectations (46). Thus, when an individual anticipates hypnosis, they are preparing to respond based on their prior beliefs, knowledge, and expectations (35,38,82,83,92,93). Clinicians ought to mobilize this principle by establishing a hypnotic context that maximizes the therapeutic outcome. During the intervention, response preparation therefore requires that health professionals inform patients about hypnosis and define their personal objectives within this particular clinical context. Informing patient is critical for increased collaboration and managing anticipation.

Some argue that the influence of expectation stems from some sort of attitude towards hypnosis (94,95). Contrary to hypnotic aptitude, which corresponds to a largely stable trait for producing reliable hypnotic responses (21,96,97), attitude relies on social-cognitive factors, including motivation, role enactment, beliefs, and expectations (35). Empirical findings corroborate the importance of attitude and response preparation for producing a reliable hypnotic response (94). Moreover, neuroimaging research with hypnosis and functional pain shows that activity in the executive network during the initial suggestion of pain predicts the subsequent quality of the hypnotic response, both at the subjective and neural levels (98). In this way, the executive network putatively plays a key role in the production of a response by allowing hypnotized individuals to develop an efficient mental strategy (21). Overall, this body of evidence emphasizes the importance of good response preparation. Thus, clinicians should enhance treatment efficacy by adequately preparing the hypnotic context. Because effects likely hinge on factors such as motivation, confidence, and desperation, constructing positive expectations—for example, through suggestions and reinforcement feedback—becomes key (29,99).

Mental imagery and the hypnotic response

Mental imagery refers to the generation of endogenous mental representations that share essential components with perceptual experiences (100-102). Due to their proximity with actual perception processing, these representations may even induce similar effects to sensory processing (103). In the context of hypnosis, an operator will often capitalize on this mental capacity to achieve certain objectives throughout the ritual (29,79). During the induction procedure, imagery can serve as a valuable target for guiding and enhancing mental absorption (79,104). For example, to deepen the state of absorption, the operator may ask an individual undergoing hypnosis to imagine walking down a staircase. During the suggestion phase, the operator may similarly use imagery to provide individuals with an efficient strategy to improve

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their responses.

Evidence notably confirms that mental visualization represents powerful mechanism for regulating pain (105-109). A recent study looked at how the content of mental imagery can serve a reliable strategy to regulate nociceptive processing (107). This study demonstrates how strategies for visual imagery—either a 'glove covering the forearm' or a 'wound'—can modulate pain perception, the threshold at which pain is experienced, and pain-related cortical responses. More specifically, these results highlight that employing opposite strategies can similarly impact perceptual processing of the nociceptive signal, while leading to contrasting effects on the threshold of pain perception. Hence, visual imagery does not serve as a mere distraction from pain but rather has a direct influence on sensory, cognitive, and affective experience along with corresponding brain activity. While visualization alone is enough to regulate pain experience, effect sizes are larger in a hypnotic context (106) and there are endless possibilities for including visual imagery in hypnotic suggestions for pain management (9). Moreover, mental images may contribute to the development of one's ability to use hypnosis by allowing clinicians to tailor their suggestions relative to the objectives of palliative care.

While some experts downplay the role of imagination in hypnosis (47), its importance has been long acknowledged (110,111). However, hypnotic phenomena hardly reduce to mental imagery (106,112-114). In our view, distinguishing hypnosis from imagery is consistent with the idea that hypnosis is multifaceted, and therefore encompasses several dimensions beyond imagery. Consistent with this view, a closer look at the evidence does reveal a certain amount of overlap between mere imagery and hypnosis (56,113,115-117). In addition, a recent meta-analytic review of neuroimaging studies revealed that hypnosis correlated most robustly with lingual gyrus activation, a brain region strongly linked with mental imagery (Landry *et al.*, 2017) (21). According to these findings, neural activation of visual areas is the singular most consistent finding in current neuroimaging studies—seemingly a core component of the hypnotic response.

Regulation of automatic processes

One striking feature of hypnosis is that hypnotic suggestions can regulate automatic cognitive processes (118). Cognitive scientists tend to operationally group mental processes into either "controlled" or "automatic", where controlled processes are effortful, intentional, and slow, and automatic processes are unintentional, involuntary and engrained (119,120). A large body of evidence demonstrates the capacity of individuals, who are highly susceptible to hypnosis, to modulate automatic processes following hypnotic suggestions (95,118,121-128). A benchmark experiment illustrating this capacity showcases reduction in the Stroop effect (121). During the Stroop task, participants see names of colors printed in various ink colors (e.g., the word "red" printed in blue ink). This experimental context requires that participants indicate the printed color and typically results in congruency effects, whereby an incongruent name and text color negatively impacts performance compared to when they are congruent due to the automaticity of reading for literate individuals (129). By exhibiting how hypnosis may reduce congruency effects in the Stroop task, this evidence indicates that individuals are capable of using efficient mental strategies for regulating mental processes heretofore considered resistant to cognitive control (43).

The possibility of derailing automatic processes affords ample applications for clinical intervention. Practitioners can notably use this inherent aspect of hypnosis as a tool to target engrained thought patterns and maladaptive behaviors that have become highly automatized, such as rumination. Viewed as a form of pathological self-reflection, rumination is characterized by compulsive thoughts about distress, repeatedly cluttering the mind with unwanted cognitions (130). Prevailing theories purport that rumination is a response to unresolved goals due to discrepancies between reality and aspirations. In palliative care, an individual must confront the psychosocial, existential, and physical aspects of the dying experience and thus often face a gap between the reality of their life and their aspirations. Indeed, patients in end-of-life care report significantly higher levels of rumination than age-matched controls (131,132). Moreover, rumination forms the onset and maintenance of psychological distress, and is completely treatable (133). Practitioners in the palliative context can harness the capacity of hypnotic suggestion to specifically target and derail negative automatic processes, such as those implicated in rumination. In this fashion, by containing the ballistic spiral of a detrimental cognitive cascade, hypnosis can lead to better psychological well-being.

Precision of the hypnotic response

Hypnosis can selectively target precise mental processes,

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leading to focal outcomes (31,134). In other words, the content of a suggestion can lead individuals to achieve a variety of very precise hypnotic responses, as a function of the desired outcome. Empirical evidence demonstrates this precision across many sensory domains (56,70,71,135,136), cognitive processes (125,137), and ideomotor processing (115) These findings demonstrate that response precision is a core feature of hypnosis; suggestions can lead to great specificity (138).

Hypnotic suggestions with visual context leads to subsequent activity in the visual cortex (56), while hypnosis can selectively target the anterior cingulate cortex (ACC) or the somatosensory cortex depending on the content of the suggestion (70). In a series of seminal papers, Rainville *et al.*, utilized hypnosis to selectively modulate sensory and affective components of the pain response, along with the corresponding neural correlates. Specifically, their findings demonstrate that hypnosis can target subjective ratings of pain unpleasantness and associated pain-related activity in limbic regions without changing the perceived intensity of the pain or neural activation of the somatosensory cortex (70,139). These findings demonstrate the extreme precision of the hypnotic response, whereby suggestion can target specific brain areas while leaving others untouched.

Because hypnosis has the potential to dissociate between subjective and sensory experience, it holds powerful clinical applications for palliative care. While the peripheral pain that accompanies terminal illness is inevitable, hypnosis can effectively contain the affective component of pain. Moreover, in palliative medicine concerns span specific domains including side effects, localized pain, but more dominantly existential anxiety and spiritual distress (140,141) which often morphs into affective anxiety (142). Hypnosis can specifically target affectivity and modulate neural activity in the ACC (70). Clinicians can harness this specificity of the hypnotic response to selectively target the strong affective component of near-death anxiety, reducing intense somatic activation in order for psychotherapy to take place. By reducing emotional anxiety, a clinician can facilitate the processing of traumatic experiences (143). Given the variety and specificity of patient needs, the precision of hypnosis renders it a useful adjunct in the clinical armamentarium of the palliative practitioner. Moreover, hypnosis is a single tool that can address a multitude of concerns spanning the psychological, medical, and spiritual needs of the patient.

Conclusions

In this paper we sketch out a framework for integrating the science of hypnosis into the palliative context. A gap between scientific data and clinical application presents a general challenge; this lacuna is especially prominent in the realm of hypnosis where data are strong and applications are sparse. For example, ample evidence supports the efficacy of hypnosis in pain management and could provide great benefit in a palliative context where patients experience severe, debilitating pain (6,7,9).

Here we show five fundamental scientific findings from hypnosis research while demonstrating how these inherent components of hypnotic phenomena lend themselves to palliative care. With a growing older population and a pressing need for innovative palliative interventions, demand for end-of-life care is on the rise. With mind-body therapies becoming more prevalent on the spectrum of palliative offerings, we submit hypnosis as a powerful adjunctive therapy to support medical, psychological, and spiritual well-being.

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Footnote

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