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ORIGINAL PAPER

Enhancing Self-Efficacy and Performance through the New Code Change Format and NLP Games in Occupational and Educational Settings

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Abstract

This paper explored the potential of enhancing self-efficacy to offer high performance and productivity in academic and occupational contexts through the innovative application of the New Code Change Format (NCCF) within the framework of Neuro-linguistic Programming (NLP). Drawing on the self-efficacy theory proposed by Albert Bandura and the principles of NLP, the proposed intervention aims to empower individuals by instilling confidence, motivation, and control over their actions. The steps involve (i) envisioning oneself or a social model successfully performing a desired action in a specific context; (ii) associating this context with a physical stimulus and making physical contact with it; (iii) playing a new code NLP game and thereby enter a content-free high-performance state; and (iv) mental rehearsal of the desired action and overcoming expected impediments thereto. The limitations of this model and prospects for future research informed by the shortcomings of past research have been discussed.

Keywords: Neuro-linguistic Programming · New Code NLP · NLP Games · Self-Efficacy · Perceived Self-Efficacy

Originally proposed by Albert Bandura (1977), the self-efficacy theory essentially holds that "people's beliefs in their capabilities to produce desired effects by their own actions" (Bandura, 1997, p. vii) are the most crucial determinants of the behaviors that they choose to engage in and the extent of their persistence when confronted with adversities and impediments. Specifically, perceived self-efficacy refers to an individual's belief in their ability to organise and execute a series of actions required to manage prospective situations, which reflects their confidence in their ability to exert control over their own motivation, behavior, and social environment (Bandura, 1990, 1997). The theory posits that these beliefs are pivotal in maintaining psychological adjustment, managing psychological issues, ensuring physical health, and formulating expert-led and autonomous behavioural modification approaches (Maddux & Kleinman, 2020). A heightened self-efficacy has generally been associated with multiple desirable outcomes, including but not limited to, occupational and educational settings.

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Neuro-linguistic programming is a psychotherapeutic approach comprising a communication framework that employs techniques to understand and reform thought and behavior (Kerna et al., 2021; Sturt et al., 2012). Richard Bandler and John Grinder first proposed this approach and coined its title in their 1975 book "The Structure of Magic I." The term signifies that an individual is an integrated mind-body entity, exhibiting systematic and patterned links among neural activities ('neuro'), language ('linguistic'), and acquired patterns of behavior ('programming') (Dilts et al., 1980). While classic code NLP focuses on modelling excellence and creating interventions based on established patterns and techniques, new code NLP emphasises design principles, deep mechanisms, and high-performance states to optimise change work and correct design flaws in the classic code (Grinder & St. Clair, 2001).

In their book, *Whispering in the Wind*, John Grinder and Carmen Bostic St Clair (2001) propose the new code change format (NCCF), a specific approach within the broader framework of the new code. The NCCF is a structured sequence consisting of four steps to facilitate effective interventions and behavioural changes. The present paper proposes a novel application of NLP, particularly the NCCF, to enhance individuals' perceived self-efficacy, in order to make way for further research on this hitherto unexplored subject.

Self-Efficacy

Self-efficacy is usually conceptualised within the broader framework of social cognitive theory, which posits an understanding of human cognition, behavior, motivation, and emotion premised on the active role individual's play in shaping, as opposed to merely reacting to, their environments (Bandura, 2001, 2006; Barone et al., 1997; Molden & Dweck, 2006).

According to Bandura (1977), self-efficacy beliefs can stem from five sources. The most potent of these are performance experiences, defined as successful attempts at controlling one's environment attributed to one's own efforts. Vicarious experiences—-observation of the behavior and consequences thereof of similar others or social models—have a weaker contribution to self-efficacy. Weaker still are the effects of imagined experiences, which involve imagining oneself or others acting effectively in hypothetical scenarios similar to those anticipated. Verbal persuasion from others about their belief in our capabilities or incapabilities also influences our self-efficacy, albeit to a lesser extent than do performance experiences and vicarious experiences. Lastly, physiological and emotional states can boost or hinder one's self-efficacy beliefs depending on the valence of those states.

The underlying tenets of Bandura's self-efficacy theory and the factors that influence it have generally received supportive evidence. Performance experiences do enhance self-efficacy (Bautista, 2011; Honicke et al., 2023; Sams & Sams, 2011; Sitzmann & Yeo, 2013), but Wagler (2011) reported no such effect. The evidence has been positive (Bautista, 2011; Hagen et al., 1998; see Kundu, 2020) or inconclusive for vicarious experiences (Sams & Sams, 2011) and shows the effect of moderating cultural factors (Ahn et al., 2016) and variables outside (Wagler, 2011) and within (Wilde & Hsu, 2019) the scope of psychotherapy. In the latter case, Wilde and Hsu (2019) found that vicarious experiences are less helpful to individuals with low general self-efficacy in task completion than to individuals with high general self-efficacy because the former make negative self-comparisons to the experience. Practitioners of the proposed procedure must help their clients use this discrepancy to fuel their motivation, which is an assumption of self-efficacy theory (Bandura, 1991).

Self-efficacy can be augmented by social/verbal persuasion (Hagen et al., 1998; Luzzo & Taylor, 1993; Newlin, 1997; Nob, 2021; see Kundu, 2020), including positive feedback (Lam & Chan, 2017) and instructional and motivational cues (Miyauchi, 2022). Literature on the effect of imagined experiences is sparse, but cognitive rehearsal, a related technique, is often used in behavior change and cognitive-behavioral therapy (McLeod & McLeod, 2011; Corey, 2013). Negative emotional states are associated with reduced self-efficacy (Gaeta González et al., 2021; Liu et al., 2022). Medrano et al. (2016) found that induction of a positive increased self-efficacy and a negative emotional state had the converse effect. However, the influence of physiological states on self-efficacy has been largely unexplored.

Previous research on self-efficacy demonstrates various positive consequences of high self-efficacy and conversely, various negative consequences of low self-efficacy. Generally, individuals possessing high self-efficacy or mastery expectations are inclined to exert greater and more persisting effort toward task completion compared to those with low self-efficacy (Schunk, 1990; Bandura, 1977) and this boosts their performance (Schunk & Rice, 1987). Conversely, a deficiency in self-efficacy is associated with helplessness (Pajares & Schunk, 2001; Seifert, 2011; Sherer et al., 1982), depression (Kasikci & Alberto, 2007), and anxiety (Panatik et al., 2011; Sanna, 1977). Perceived self-efficacy indicates a person's trust in their ability to face and succeed in an academic, personal, or professional challenge (Fogg-Rogers & Moss, 2019; Kanadlı, 2017).

In the workplace, people with high self-efficacy learn more, elevating their job performance (Lunenburg, 2011). Self-efficacy is associated with the action (Constant et al., 1996), intention (Wang et al., 2021), and a positive attitude (Bock & Kim, 2002) towards sharing of useful knowledge. Kumar Pradhan et al. (2021) found that self-efficacy has a positive relationship with workplace well-being, with resilience as a moderator. In an educational setting, students' self-efficacy beliefs affect their task choice, persistence, effort, and achievement (Schunk, 1995). Self-efficacy positively predicts their self-regulation and cognitive engagement (see review by Pintrich, 1999). It is also associated with reduced procrastination and a positive emotional state (Morin-Huapaya et al., 2023). Research demonstrates that self-efficacy is one of the motivational factors that most strongly predict learning and achievement (Bandura, 1997; Eccles et al., 1998; Pintrich & Schunk, 2002; Schunk, 1991). Self-efficacious teachers tend to provide more instructional choices (Flowerday & Schraw, 2000).

Relationship Between Self-Efficacy and High Performance

In the workplace, people with high self-efficacy learn more, elevating their job performance (Lunenburg, 2011). Self-efficacy is associated with the action (Constant et al., 1996), intention (Wang et al., 2021), and a positive attitude (Bock & Kim, 2002) towards sharing of useful knowledge. Kumar Pradhan et al. (2021) found that self-efficacy has a positive relationship with workplace well-being, with resilience as a moderator. Additionally, since self-efficacy involves increased confidence in one's ability to succeed, it has been shown to contribute to greater work motivation and goal-setting behaviours (Inuwa & Sabo, 2022). Individuals high on self-efficacy may put in more energy, setting and striving to

achieve higher standards. Several studies have corroborated the role of self-efficacy in promoting performance and productivity (Liu et al., 2010: Chaudhary et al., 2012). One's self-efficacy beliefs further influence their adaptability to advanced technologies, their ability to cope with challenging situations, their capacity for team work and growth at a managerial level (Haddad & Taleb, 2016). In this manner, self-efficacy can contribute to the intrinsic motivation of employees, thereby promoting high performance, productivity and employee efficiency.

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Thus, an increase in self-efficacy can contribute to high performance and productivity of individuals within educational and occupational contexts, enhancing their effectiveness of work.

New Code Change Format

The application of NLP to various conditions has been researched, including phobias (Karunaratne, 2010; Einspruch & Forman, 1988; Arroll et al., 2017; for a review, see Sturt et al., 2012); anxiety (Adams et al., 2023; Savardelavar & Kuan, 2017; for a review, see Sturt et al., 2012 and Nompo et al., 2021) PTSD (Wake & Leighton, 2014); occupational stress (Mohamad, 2011; HemmatiMaslakpak et al., 2016); chronic pain (Bolstad & Prochazka, 2003; Walker, 2004); morning sickness (Timpany, 1994, as cited in Sturt et al., 2012) and hyperemesis gravidarum during pregnancy (Wheatley, 1977); vision problems (for review, see Pensieri, 2013) and substance abuse (Gray, 2002). However, the NCCF and its effectiveness for behavior change and performance excellence have hitherto not been empirically researched.

The NCCF, as proposed by Grinder and St. Clair (2001), is a series of steps that an NLP practitioner and their participant follow to induce desired change in a behavior chosen by the participant. First, the participant selects a context where they wish to influence a behavior from a detached third-person perspective ('third position'). In the second step, the participant physically localizes this context, steps into their own image within it ('first position'), and self-calibrates without attempting any change. Thirdly, the individual engages in a content-free game or activity to activate high-performance state circuits. 'Content-free' signifies the non-reliance of these activities or games on specific content or historical experiences. As examples of such activities, Grinder and St. Clair (2001) mention The Alphabet game, the NASA game, and trampoline work. Finally, immediately after the game, the individual steps back into the first position within the physical space representing the context of the desired change. Some practitioners claim that their participants feel a tingling sensation, see colors, or experience metaphors at this stage, but different participants can experience this differently as the experience is unique for each participant.

Grinder and St. Clair (2001) specifically delineate the process of playing The Alphabet game. Figure 1 shows an example of a chart used in the game, which consists of the first 25 letters of the English alphabet and beneath each one of three instructions, standing for right (r), left (l), and together (t). The game can be played in three fundamental conditions.

a l	b r	c t	d t	e l
f l	g r	h t	i r	j t
k l	l r	m t	n l	o r
p l	q t	r l	s l	t t
u l	v l	w t	x r	y t

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Figure 1. The Alphabet Chart in Grinder and St. Clair (2001)

In condition one, the participant starts with the letter 'a', says it aloud, and raises the hand indicated by the instruction below it. This process continues through the alphabet to 'y', and is repeated until both participant and coach are satisfied with the execution. Condition two is similar to the first, but the participant begins with 'y' and moves backwards through the alphabet to 'a', ensuring correct execution of the movements and vocalizations. Building on the second condition, in condition three, the participant adds the opposite leg's movement to the hand movement while reciting the alphabet backwards. The instruction 't' in this condition would imply a small jump. This condition is played for about 10 minutes or until the participant feels a tingling sensation, indicating activation of a high-performance state. Some practitioners also report that their participants feel a temporary flow state, according to which the practitioner calibrates the procedure.

The NCCF emphasizes the role of the unconscious mind in selecting and implementing new behaviors or resources that align with the individual's positive intentions. The format is designed to induce high-performance states through specific activities or games, facilitating natural and ecological changes in the desired context. This process was purported by Grinder and St. Clair (2001) with the assumption that the unconscious has 'enormous resources,' which can be accessed when the participant enters a physiologically aroused and content-free state when performing the task at which they wish to succeed. This 'know-nothing state' is defined as being devoid of any expectation or bias towards a particular course of action. It is assumed that this will rapidly and automatically elicit the most efficient response for the task at hand.

NCCF to Enhance Self-Efficacy

The objective of this paper is to propose a novel method of enhancing self-efficacy using the NCCF by integrating the two frameworks as proposed by their respective founders. This is to propose a model for improving the performance and productivity of the participants by employing the NCCF. The presented method may be applied to educational and occupational settings to improve the self-efficacy, and thereby performance and productivity of students and employees. In the third step, the participant plays the NLP game of their choice, which, according to the NCCF, would induce in the participant a high-performance state and mobilize the resources contained in their unconscious mind. In accordance with the NCCF, the participant is instructed to refrain from consciously influencing the envisaged scenario or their experience during the first three stages. Finally, while carrying the high-performance state and the resulting know-nothing state, the participant moves back into the visualized context and mentally rehearses the issues they might encounter when performing the imagined task; e.g., in case of delivering a presentation, handling unexpected questions or technical glitches smoothly. These successful imagined and/or vicarious experiences can by themselves subtly boost perceived self-efficacy, thereby leading to an in performance and productivity (Bandura, 1977).

Modulation of Affect through the Two-Factor Theory of Emotion

The NLP trainer is expected to provide verbal persuasion to the participant whenever required throughout the process. According to the two-factor theory of emotion, when the new code NLP game puts the participant in a state of physiological arousal positively, the participant would likely label it with a positive valence using the positive emotional cues provided by the successful imagined and/or vicarious experiences and verbal persuasion by the practitioner (Schachter & Singer, 1962). This positively valenced emotional-physiological state is a third factor that may boost perceived self-efficacy (Bandura, 1977). Through classical conditioning, this positively valenced emotional-physiological state may also be elicited when performing the actual task, which can further enhance perceived self-efficacy right before performance. Through the NCCF, the unconditioned response of a negatively valenced emotional-physiological state would be replaced by a positively valenced one, with the stimulus being the task at hand, given the pairing of the stimulus with the positively valenced emotional-physiological state has occurred frequently and strongly enough. It is hoped that stimulus generalization will allow the response conditioned to the imagined scenario also to be elicited by the real scenario.

The expected outcome of the above process is that in the context of the actual task, the participant will not only have rehearsed solutions to the foreseeable impediments to their ideal performance, but they will also be prepared to resolve any de novo obstacles using their know-nothing state. While the former outcome aligns with operant conditioning, the latter aligns with classical conditioning. The know-nothing state and rehearsed solutions, along with the augmented perceived self-efficacy provided by the three previously mentioned factors would lead to a successful performance experience in the real context, which would provide the greatest increment to performance. If this process is repeated for a variety of tasks, and if success is achieved the majority of times, it is hoped that the individual's productivity will experience a more stable boost. The procedure would help kick-start an additive and iterative cycle of higher self-efficacy as well as successful performance experiences where each strengthens the other.

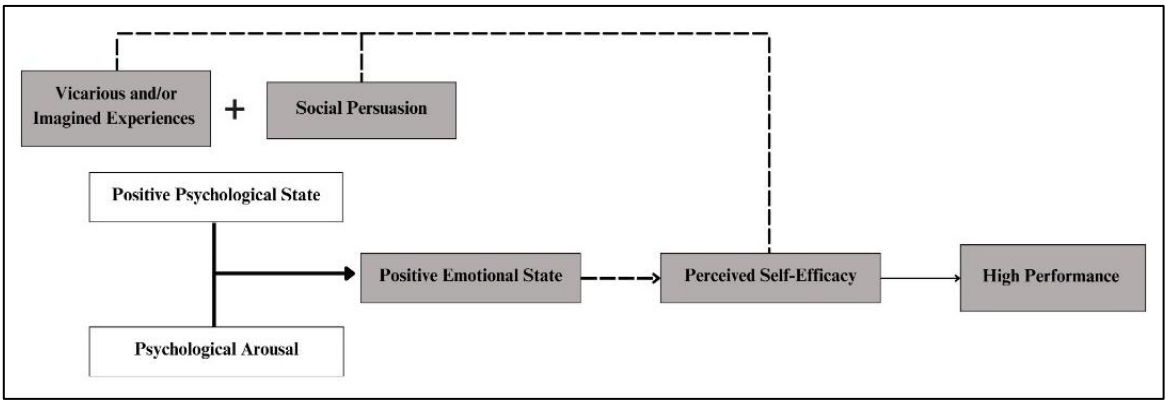

Figure 2. The flowchart for the procedure

Discussion

This paper proposes a novel application of Bandura's self-efficacy theory and the NCCF within the framework of NLP to enhance self-efficacy (by extension, performance) in individuals within academic and occupational settings. Considering the strong research base for the self-efficacy theory and a lack thereof for the NCCF, it is unclear whether the proposed intervention will cause significant improvements in the performance and productivity of the participants. Nonetheless, the rationale of this study is the proposal of a new research avenue for NLP research in conjunction with a concept that has already been established by decades of research. Future research must be informed by the shortcomings of previous work in both fields, especially NLP. The NCCF presents itself as a framework separate from the rest of NLP techniques and procedures. Therefore, researchers are advised to approach it with an open mind.

Limitations

NLP as a whole has been criticized for the lack of scientific evidence supporting its claims in the realm of research (Sharpley, 1987; Thyer & Pignotti, 2015; Witkowski, 2010). Passmore and Rowson (2019) articulate the unscientific process used by Bandler and Grinder to formulate NLP.

In addition to the shortcomings of the idea of NLP itself, its research has also been scrutinized. Pensieri (2013) and Sturt et al. (2012) reviewed the literature on NLP and identified methodological errors, incomplete data reporting, high risk of bias, small samples, and qualitative methodology, which deteriorate the quality of evidence presented in these publications and thereby its generalizability and recommendability for the issues that it claims to treat. Sturt et al. (2012) also pointed out the lack of a systematic review of NLP literature that has applied Cochrane methods. Moreover, Passmore and Rowson (2019), when undertaking a critical review of literature on NLP coaching, observed generally inextensive published research on the topic, especially RCTs, of which they found none. They attributed this lack of publications to publication bias, whereby null or negative results are less likely to be reported by researchers and published by reviewers and editors than positive results, despite comparable quality of execution and design.

Specifically, the NCCF as a technique and its underlying assumptions, such as the benefits of the 'know-nothing state' and the characteristics of the 'high-performance state' have not been researched. Therefore, it has not been standardized and statistics on its practice are unknown. Its efficacy could be influenced by its setting, procedure, duration, frequency, and intensity, and the individual differences and cultural influences pertaining to the participant. Furthermore, the potential side-effects of this technique and the sustainability of its positive effects (if any) are unknown.

As mentioned previously, the tenets of self-efficacy theory have generally received confirmatory evidence. Research has also uncovered the multitude of individual and cultural factors that can impact the extent and mechanisms through which the five factors augment self-efficacy. Although this paper does not cover such nuances, it is advisable for future researchers to account for individual and cultural factors when testing the efficacy of the proposed intervention. Thus, the iterative and additive relationship between the two variables that underpin a major strength of this intervention can be called into question.

Future Research

Given the aforementioned authors' criticisms of the scientific investigation of NLP, rigorous research, both using primary and secondary data, is required to enrich the NLP knowledge pool with quality evidence, be it in support of NLP or otherwise. For this purpose, randomized control trials, usually considered the gold standard for evaluating the effectiveness of interventions, are recommended. A sufficiently large sample size, random allocation, allocation concealment, and other guidelines according to the latest CONSORT statement (2010) need to be followed and reported for RCTs.

NLP has also been criticized for being a 'ragbag of different techniques' (Briers, 2012, p. 15) and for its overlap with

CBT, behavior therapy, and other well-established psychotherapeutic approaches. This overlap includes, but is not limited to, techniques such as anchoring, belief-changing, reframing, and visualization, which are analogous to classical conditioning, cognitive restructuring, cognitive reframing, and covert or self-modelling/guided imagery, respectively, in CBT and behavior therapy. It is, therefore, necessary to extricate the active components central and unique to NLP and compare their efficacy with placebo psychotherapeutic treatments without those components. Such unique components may include the observation of the client's eye movements by the therapist to identify their primary representational system (PRS). Furthermore, evaluating the efficacy of NLP against CBT in RCTs using two groups of participants may ascertain whether the specific manner in which NLP combines the overlapping techniques is more efficacious than how CBT does the same.

Since the NCCF has not been previously researched, this paper would inform research endeavors by a concrete and clear application of the NCCF to a well-established concept. After testing its core assumptions and investigating its potency in enhancing self-efficacy, future research could assess the relative effectiveness of each of the three conditions of The Alphabet game. This may be carried out by taking them as three different levels of intervention in the treatment group wherein participants are randomly allocated to the group receiving each level, as well as the control and/or placebo group. The difference between the pre- and post-test measures of the dependent variable would then be compared among the groups. Additionally, future research would need to determine the optimal duration, frequency, and setting for this intervention with the ultimate goal of its standardization. The role of cultural and individual factors should also be explored to help practitioners adapt the technique for their clients.

Concerning self-efficacy, future research needs to determine the cultural and individual differences that could influence the efficacy of the proposed intervention. Further, it must also ascertain how each of the five factors proposed by Bandura affect one another when working in tandem. Lastly, given the inconclusive evidence on the enhancement of future performance through heightened self-efficacy, research must isolate increases in self-efficacy through each of the five factors and combinations thereof in order to determine which antecedent or a combination thereof confers the strongest relationship between self-efficacy and future performance.

Conclusion

This manuscript has proposed a novel method of enhancing self-efficacy by applying the New Code Change Format (NCCF) within the Neuro-Linguistic Programming (NLP) framework. Integrating these two approaches aims to empower individuals in academic and occupational settings to boost their confidence, motivation, and performance outcomes. The NCCF and the field of NLP require further and rigorous empirical research to validate their effectiveness. Addressing the identified limitations, such as generalizability, ethical considerations, long-term sustainability, lack of empirical studies, individual variability, cultural factors, and resource intensity, will be crucial in advancing the understanding and application of the NCCF for enhancing self-efficacy. Moving forward, a comprehensive and rigorous investigation using randomized control trials and adherence to research guidelines will be essential to enrich the knowledge base and provide quality evidence supporting the efficacy of the NCCF in promoting self-efficacy and performance and overall well-being in diverse populations. By addressing these considerations, future studies can contribute to the advancement of effective interventions that empower individuals to achieve their full potential in various aspects of their lives.

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Declarations

Conflicts of interest: The author has no conflicts of interest.

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