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A Systematic Review on Decoding Deception as a Function of Cognitive Style

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Abstract

This article provides a systematic review on the issues of the similarities between two concepts 'camouflage and deception' and the relationship between 'decoding deception and cognitive style'. The key elements of deception are 'intention to mislead' and 'consciousness of the act'. Similar to camouflaging strategies there are some in- built, unwritten norms of behavior in a given social situation to manage social interactions during deception. Secondly the concept of decoding deception and cognitive style specifically field dependence- independence dimension had been elucidated. Lastly, the relation between decoding deception and field dependence-independence examined. The review indicates that field-independents, because of their analytic and cognitive restructuring skills, have an inclination towards observing the differential features of expression to decode deception than field-dependent individuals.

Keywords: Camouflage; Deception; Decoding Deception; Cognitive Style; Gestalt Concept

Abbreviations: FI: Field Independent; FD: Field-Dependent.

Introduction

Deception is a social behavior characterized by a tendency to convey misleading information to others on some purpose. Deception has evolved under the process of natural selection [1]. Organisms practice deceptions through camouflaging by resembling self with the environmental background when its survival is at stake with its own identity. For example, before industrial revolution the peppered moth, *Biston-betularia*, in Europe used to come in two colors: a speckled color and black. In Britain tree trunks normally covered by lichen had the background like that of speckled moth, resulting in difficulty to spot out the moth. But when industrial pollutants killed the lichen in many parts of Britain, leaving tree trunks exposed, the speckled pepper moth became clearly visible but the black moth was not. This camouflage conferred greater life expectancy to the black moths by decreasing the risk of predation by birds, and the moths who survived used to pass their black coloration to the descendants [2]. Camouflage, here, is linked to species survival.

Camouflage or deception is a phenomenon of embeddedness. The coloration and striping of many animals enables them to blend with their background and getting embedded in it by evading sharp discontinuities of brightness and color. Likewise, deception in social interaction is a form of camouflage having many adaptive purposes. For example, Metts S [3] in a study reported that both married and dating partners sometimes practice emotional deception to maintain relational harmony (e.g., expressing love or happiness to the partner when it was not felt at the moment).

Similarly, interactants practice deception in order to maintain the smooth flow of interaction [4]. Hence, all emotional expressions of the interactants not always reflect the actual emotional experience. In social deception, during any change in the social context, individuals camouflage by suppressing or altering their experienced personal feelings to others. It happens when the expression of emotion of an individual is inappropriate to the changed social context where the other persons in the situation do not have any common sharing ground with the given emotional experience. One also changes the felt emotion in accordance with normative expectation which is considered as deception. For example, someone is intensely angry to an authority figure, but the person would control temper to manage the interaction with a smile, which is not felt and genuine at that time. In- built behavior based on unwritten social norms resemble camouflaging strategies to manage social interactions. Researcher defines deception as a "successful or unsuccessful deliberate attempt, without forewarning, to create in another a belief which the communicator considers to be untrue" [5]. This definition implies that "intention to mislead" and "consciousness of the act" are the key elements for deception to occur.

Decoding Deception

Basic purpose of using camouflage or deception is to mislead the perceivers' attention from the truth by portraying convincing adaptive expression to hide the real intent. Detection of deception in deceiver by an observer is a cognitive function. However, little is known about the factors that influence ones' ability to detect camouflage or deception, though some individuals are exceptionally good at detecting camouflage, others are not so keen in detection. Detectability of a concealed item requires inherent capacity of the Gestalt concept of "figure-ground" relationships and Gestalt principles (proximity, closure, similarity, continuity, common fate and symmetry).

Social deception is a complex cognitive behavior [6]. The methods such as polygraph, cognitive polygraph, facial electromyography, eye tracking, voice stress analysis, functional magnetic resonance imaging and thermal face imaging are used to analyze high stake deceptions [7,8]. It should be noted that the majority of lies told by people in day-to-day communication are not high-stake deception [9-11]. In da-to-day social communication, deception does not have much to gain or lose. Low-stake social deception does not have always strong intent to mislead other interactants but serves miscellaneous intentions of an individual like: making good impression; regulating conversation; protecting others' feelings. Deception even protects a person's need for privacy pertaining to personal feelings.

The socially appropriate emotional cues of nonverbal expressions are learnt by a fast and covert motor simulation of perceived expressions by the mirror neuron system. With the time this learned behavior becomes their deeply ingrained habit which require 'no or little' conscious effort to hide their expressions of true feelings in socially appropriate manner [12]. Taking a clue from the work of Guthrie JA, et al. [13] the notion of "deception as social norm", it is understood that the low-stake deception is at the root of developing high-stake deception both belonging to the same continuum.

Decoding social deception depends on 'how one perceives others' expression' as well as 'what is being perceived in others' expression', therefore it is imperative to examine the issue from the perspective of cognition. In case of camouflage as well as social deception an elementary indicator of an individual's perceptual style is the ability to visually separate a simple item or pattern within a more complex pattern [14]. Like deciphering the figure from the embedded background in camouflage, one needs to decode idiosyncratic features of felt emotion, which is embedded in the blended facial appearance of deceived expression. Accordingly, decoding deception requires analytical perspective-taking, sustaining attention and cognitive restructuring abilities. In view of the fact that deception is a complex cognitive behavior, it is crucial therefore, to examine the issue from the perspective of cognitive style of field dependence and field independence.

Cognitive Style

Cognitive style is a dimension representing consistencies in an individual's manner of cognitive functioning, particularly with respect to acquiring and processing information. Witkin HA, et al. [15] defined cognitive style as "...the characteristic, self-consistent modes of functioning which individuals show in their perceptual and intellectual activities." Psychologists believe that individuals' biological and psychological differences affect the ways in which people perceive events, objects, sights, sounds, and feelings. When several people encounter an identical object or event, each might experience a different perception of that object or event. Cognitive style is the manner by which individuals perceive information in the environment and the patterns of thought that they use to develop knowledge-base about the world around them. The concept of styles of cognition, an area under continuing investigation, has been discussed and researched in the psychological community since late 1930s.

Witkin HA, et al. [14-16] and his colleagues have published two major books on the subject of perceptual style. His work was primarily in the area of association of perception with personality [17]. However, Witkin's work with the concept of field dependence-independence has opened the door for a great deal of research including the study dealt with in our present report. 'Field independence' is the name given

to the sphere of qualities to separate a simple figure from a more complex figure in which it is embedded. The field independent (FI) person is characterized as being analytical [14], concerned with the details of his environment with the ability to break up organized perceptual field, finally leading to clear differentiation of any item from its context [18]. Ability to articulate or differentiate complex stimulus fields [19] is the key characteristic of field independence. The field- dependent (FD) person, on the other hand, is characteristically opposite with global cognitive styles [14], with low analytical ability causing difficulty in separating an item from its background. The global FD cognitive style is perhaps attributable to their context dependence in dealing with his environment and ready acceptance of the prevailing field or context [18]. Analytical perspective taking, sustaining attention and cognitive restructuring may be considered as the determinants of field articulation.

Cognitive Style in Decoding Deception

Many studies had been conducted to identify the impact of efficiency in cognitive differentiation (based on the construct of cognitive style) on judgmental accuracy. Messick S, et al. [20] reported that field dependent (FD) individuals are better at remembering faces. Manning L [21] in his research found that in case of unilaterally presented facial expression recognition task, field independents (FI) showed significant left visual field superiority where, low but significant right visual field superiority was present for the FDs, suggesting FI's greater right hemisphere lateralization effects than FDs in processing facial expression. Karabuschenko NB, et al. [22] in their cross-cultural research stated that high levels of emotional intelligence as well as cognitive style are closely related to the emotion recognition from facial expressions.

In another research based on information processing of FD-FIs, it has been found that may be FI are efficient searchers because of the adoption of parallel processing strategy in contrast to that of serial processing by FDs [23]. Being restricted to serial processing may be at the root of the relative inefficiency in searching process in FD. In case of camouflage detection task, researchers found better performance of the FI participants than the FD group which they have attributed to different processing methods in two groups for the detection task [24]. Over the years, the psychologists have been working to understand the nature and different correlates of cognitive style and detection ability. However, to date there is a dearth of research regarding decoding deception and cognitive style. The implication of cognitive styles in decoding deception is that people with field independence may effectively breakup the given organization of cues and being analytic could detect the differential cues of deception in day-to-day social communication. Number of studies by Strauss and his associates has demonstrated the need for a deeper understanding of the perceptual stage of visual detection [25]. Detection process involves first the sensation, and then the correct perception of the item being searched for. It would be quite a simple matter to study detection only in terms of visual capability.

Mondal A [26] reported that superiority of the FI group compared to the FD group may be attributed to their cognitive precision to detect the subliminal markers of EFEs. According to Manning L [21], FI people show greater right hemisphere lateralization effects in case of facial expression processing than FD individuals. Earlier empirical investigations of hemispheric asymmetry in facial expression recognition suggested that the right hemisphere assumes a predominant role in the recognition of facial expression [27,28]. FI individuals can synthesize the somesthetic sensory information with more reliance upon self-experienced kinesthetic references [29]. Witkin H, et al. [30] hypothesized that FI individuals assumed to have greater self-non-self-segregation with a more articulated body concept and a greater sense of personal identity [31]. They also have greater autonomy from external source of information during social interaction [30,32]. Their greater efficiency to detect subliminal markers from the field could be the function of the (for which FI is perhaps programmed) interplay between the differentiation and synthesis of the cues. Rajagopalan J, et al. [24] reported that activation of the thalamus circuits, including thalamus-prefrontal, thalamus-temporal in FIs while detecting camouflage, along with the bilateral activity of Area 17 and 18 might be regarded as key contributors for FIs' enhanced performance.

FI groups could detect markers in deceived expression of emotions may be because of their cognitive restructuring capacity. Earlier studies have suggested that FI individuals are more capable of cognitive restructuring [14,33]. Witkin HA, et al. [34] identified three separate but related skills within cognitive restructuring: providing structure for an ambiguous stimulus complex, breaking up an organized field into its basic elements and providing a different organization to a field than which is suggested by the inherent structure of the stimulus complex. Mondal A, et al. [26] had the similar observation in their study. In essence field independence involves the ability to "articulate, or differentiate, complex stimulus fields" [35] and they are keener to see "the parts of the field as distinct from the ground, analyze or synthesize the details and parts of a figure and organize the whole structure of the field in a new way" [31]. These characteristics of FI individuals may help them to analyze minute intricacies of deceived expression.

Studies of selective attention tasks have investigated the mechanism of selection from two perspectives: global versus analytical approaches of information processing. FD

individuals tend to focus on global aspect of the information, where FI individuals tend to focus on relevant aspects. This difference has been found both in children [36-38] and in adults [39,40]. Since FD individuals are less able to make spontaneous differentiation of heterogeneous items into related groups and rely on visual cues only, they could not break up the facial expression in terms of differential cues. Their system of thought is to attend the entire field and making little use of categories [41]. In a nutshell, FI's capability of cognitive restructuring [34], selective attention [42] and sustained attention [42,43] together may help them to detect differential cues to decode deceived expression more accurately.

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