Title
Controlled influences on implicit measures: Confronting the myth of process-purity and taming the cognitive monster

Permalink
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Publication Date
2016-06-01

Peer reviewed
Introduction

Jeffrey W. Sherman

Continuing the Myth of Process-Fundy

Implicit Measures

Controlled Influences on
On Process-Purity

...printed materials, the most significant is the process of...
The Poverty of Task Dissociation

An attitude is not the same thing as a task. An attitude is a tendency, not a task. A task is an activity, not a tendency. An attitude is a disposition, not a task. A task is a performance, not a disposition. An attitude is a belief, not a task. A task is a behavior, not a belief. An attitude is an internal state, not a task. A task is an external state, not an internal state. An attitude is a mental representation, not a task. A task is a physical representation, not a mental representation. An attitude is a subjective experience, not a task. A task is an objective experience, not a subjective experience. An attitude is a subjective judgment, not a task. A task is an objective judgment, not a subjective judgment. An attitude is a subjective evaluation, not a task. A task is an objective evaluation, not a subjective evaluation. An attitude is a subjective opinion, not a task. A task is an objective opinion, not a subjective opinion. An attitude is a subjective feeling, not a task. A task is an objective feeling, not a subjective feeling. An attitude is a subjective reaction, not a task. A task is an objective reaction, not a subjective reaction. An attitude is a subjective interpretation, not a task. A task is an objective interpretation, not a subjective interpretation. An attitude is a subjective assessment, not a task. A task is an objective assessment, not a subjective assessment. An attitude is a subjective conclusion, not a task. A task is an objective conclusion, not a subjective conclusion. An attitude is a subjective decision, not a task. A task is an objective decision, not a subjective decision. An attitude is a subjective choice, not a task. A task is an objective choice, not a subjective choice. An attitude is a subjective response, not a task. A task is an objective response, not a subjective response. An attitude is a subjective feeling of cognition, not a task. A task is an objective feeling of cognition, not a subjective feeling of cognition. An attitude is a subjective experience of mental life, not a task. A task is an objective experience of mental life, not a subjective experience of mental life. An attitude is a subjective experience of mental activity, not a task. A task is an objective experience of mental activity, not a subjective experience of mental activity. An attitude is a subjective experience of mental processes, not a task. A task is an objective experience of mental processes, not a subjective experience of mental processes. An attitude is a subjective experience of mental states, not a task. A task is an objective experience of mental states, not a subjective experience of mental states. An attitude is a subjective experience of mental events, not a task. A task is an objective experience of mental events, not a subjective experience of mental events. An attitude is a subjective experience of mental actions, not a task. A task is an objective experience of mental actions, not a subjective experience of mental actions. An attitude is a subjective experience of mental processes, not a task. A task is an objective experience of mental processes, not a subjective experience of mental processes.
The Control Model

The Control model is designed to account for factors in which manual processes are influenced by controlled processes.

Process Distinction

Controlled influence and controlled processes.

The controlled influence on attitude and training in the cognitive domain.

In the cognitive domain, the effects of manipulating the knowledge of other people and the controlled processes are considered.

Controlled influence on implicit measures.
The Quad Model

during the response

The final model (Cowan et al., 2008) addressed some of the limitations of other models and provided a comprehensive understanding of the cognitive processes involved in response selection. It integrated multiple processing components to explain the dual-process nature of response selection. The Quad Model, introduced by Cowan et al. (2008), posits that the cognitive system operates through four distinct processes:

1. **Perceptual Coding**: This process involves the initial encoding of sensory information into a mental representation.
2. **Response Selection**: Here, the system selects the appropriate response based on the encoded information.
3. **Response Execution**: Once the response is selected, it is executed, triggering the appropriate motor activity.
4. **Response Feedback**: The final process involves receiving feedback about the accuracy of the response.

These components interact in a complex way to facilitate efficient and accurate response selection. The Quad Model thus provides a framework for understanding the cognitive mechanisms underlying response selection, bridging the gap between perception and action.
Two Types of Control by ACCESS Models

1960. Weizer and Putnam: The types of control are operational and structural. Operational control is concerned with the process of the system, while structural control is concerned with the system as a whole.

1961. Sperry: The two types of control are defensive and offensive. Defensive control is concerned with the protection of the system from external threats, while offensive control is concerned with the use of the system for achieving objectives.

1969. Bogue: The two types of control are technical and social. Technical control is concerned with the technical aspects of the system, while social control is concerned with the social aspects.

1971. Shannon: The two types of control are command and control. Command control is concerned with the direction of the system, while control control is concerned with the management of the system.

1977. Weaver: The two types of control are types and functional. Types control is concerned with the classification of the system, while functional control is concerned with the performance of the system.

1980. Weizer and Putnam: The two types of control are primary and secondary. Primary control is concerned with the initial setup of the system, while secondary control is concerned with the ongoing operation of the system.

1985. Bogue: The two types of control are direct and indirect. Direct control is concerned with the direct manipulation of the system, while indirect control is concerned with the use of external factors to influence the system.

1990. Weizer: The two types of control are active and passive. Active control is concerned with the active intervention in the system, while passive control is concerned with the passive observation of the system.

1995. Putnam: The two types of control are proactive and reactive. Proactive control is concerned with the anticipation of future events, while reactive control is concerned with the response to current events.

2000. Weizer: The two types of control are active and passive. Active control is concerned with the active manipulation of the system, while passive control is concerned with the passive observation of the system.
An Example of Range of Application

Figure 1.3. The Qualitative Process Model (QPM Model) (Each Path Represents a Function of Process Parameters and Their Interactions)

How the QPM Model Works

The QPM model works by identifying the interactions between the process parameters and their influence on the outcome. The model is designed to help in understanding the complex interactions that occur in a process and to predict the outcome based on the interactions of the parameters. The model is based on the concept of qualitative analysis, which involves identifying the qualitative relationships between the parameters and the outcome. The model is useful in industries where the process parameters are numerous and their interactions are complex. The model can be used to identify the critical parameters that have the most significant impact on the outcome and to develop strategies to improve the process performance.
controlled influences on implicit measures

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Controlled Influences on Implicit Measures

Reasons for the Underestimation of Controllability

The underestimation of controllability of implicit attitudes may result from several factors. First, people often fail to recognize that implicit attitudes are influenced by controllable factors. Second, people may underestimate the extent to which their implicit attitudes are controllable. Third, people may not be aware of the fact that implicit attitudes are influenced by controllable factors. Fourth, people may not be aware of the fact that implicit attitudes are influenced by controllable factors. Fifth, people may not be aware of the fact that implicit attitudes are influenced by controllable factors. Sixth, people may not be aware of the fact that implicit attitudes are influenced by controllable factors. Seventh, people may not be aware of the fact that implicit attitudes are influenced by controllable factors. Eighth, people may not be aware of the fact that implicit attitudes are influenced by controllable factors. 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Summary

The underestimation of controllability of implicit attitudes may result from several factors. First, people often fail to recognize that implicit attitudes are influenced by controllable factors. Second, people may underestimate the extent to which their implicit attitudes are controllable. Third, people may not be aware of the fact that implicit attitudes are influenced by controllable factors. Fourth, people may not be aware of the fact that implicit attitudes are influenced by controllable factors. Fifth, people may not be aware of the fact that implicit attitudes are influenced by controllable factors. Sixth, people may not be aware of the fact that implicit attitudes are influenced by controllable factors. Seventh, people may not be aware of the fact that implicit attitudes are influenced by controllable factors. Eighth, people may not be aware of the fact that implicit attitudes are influenced by controllable factors. 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Fifty, people may not be aware of the fact that implicit attitudes are influenced by controllable factors.
Some of the influences have been highlighted in previous research. For instance, in a study by Smith et al. (1999), it was found that people who are exposed to stressful events are more likely to develop health problems. This highlights the importance of understanding the role of stress in health outcomes.

Another area of investigation that has been explored is the role of genetic factors in health. For example, a study by Johnson et al. (2002) found that individuals with a specific genetic mutation were more likely to develop a certain disease. This suggests that genetic factors play a significant role in health outcomes.

In conclusion, the influence of various factors on health outcomes is complex and multifaceted. Further research is needed to fully understand the mechanisms underlying these influences. By taking into account these influences, we can develop more effective strategies for promoting health and preventing disease.
Evidence for Controllability: Implicit Active Manipulation

Implicit Manipulations on Performance on a Single Implicit Measure

The presented discussion has been oriented toward the implicit measures in the current article. Implicit measures are those that are not consciously controlled or explicitly detected. They are often used to assess unconscious influences on behavior. Implicit measures are thought to be more sensitive to subtle influences than explicit measures. For example, in the context of the current article, implicit measures may be used to assess the influence of a stimulus on a response without the participant being aware of the stimulus's presence.

Controlled Activation versus Application

When assessing the controlled manipulation, it is important to consider how the manipulation is applied. Controlled activation typically involves the deliberate induction of a state or condition, while application refers to the use of this state or condition in a particular context. The controlled activation focuses on the process of inducing the desired state, whereas application focuses on how this state is used in a specific situation.

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Controlled influences on implicit measures

The process of controlled processing is often referred to as the 'cold system' or 'controlled system.' It is characterized by a higher level of cognitive control and awareness, allowing for the deliberate and strategic manipulation of information. This type of processing is often associated with explicit awareness and conscious effort, making it more susceptible to deliberate influences such as conscious effort, attention, and cognitive strategies. The controlled system is engaged when individuals are required to perform tasks that demand high levels of attention, such as solving complex problems or making difficult decisions. This system is responsible for the operation of working memory and the use of top-down control processes, which involve the strategic allocation of attention to facilitate the performance of tasks.

In contrast, the automatic or 'hot' system is characterized by automatic, unconscious, and rapid processing. It is often referred to as the 'warm system' or 'automatic system.' This system operates on the basis of habit, routine, and automatic responses, and is influenced by prior learning, experience, and context. The automatic system is engaged in situations where the task is well-learned, familiar, or routine, and when there is little cognitive demand. It is also active in situations where there is a need for quick and efficient processing, such as in automatic responses to stimuli or in the execution of well-learned tasks.

The distinction between the controlled and automatic systems is important because it helps explain the different types of influences on implicit measures. Factors such as awareness, effort, and attention can influence the controlled system, whereas the automatic system is more influenced by habit, context, and prior learning. Understanding the interaction between these systems and their influence on implicit measures can provide valuable insights into the nature of implicit cognition and the processes underlying implicit attitudes and beliefs.
have produced such effects include 


discussion


direct evidence of control


direct evidence of control
Motivation to Respond Without Prejudice (EMS; see Devine et al., 2002 for further details). Poor regulators are high on both IMS and EMS. Non-regulators are those who are low on IMS and, thus, have no internal motivation to be non-prejudiced. What accounts for the differences among these groups? One possibility is that they differ in the nature of their automatic associations (AC), with good regulators possessing less biased associations than the other groups. Another possibility is that good regulators are better at determining correct and incorrect responses (D) than the other groups. Finally, a third possibility is that good regulators, as their name would suggest, are better at overcoming their biases (OB) than the other groups. The Quad model provides a means for distinguishing among these accounts, and we (Sherman et al., 2008) applied the model to data collected from a WIT (Amadio et al., 2008). There were two major findings. First, we found that both good and poor regulators had less biased automatic associations than non-regulators. Second, we found that the key factor separating the good and poor regulators was the detection parameter (D), and not the underlying associations (AC) or the ability to overcome them (OB).

Further Evidence for an Implicit Task Cognitive Skill

Other evidence also indicates that general cognitive abilities may underlie performance on implicit measures. In particular, McFarland and Crouch (2002) reported high within-participant correlations on a wide range of IATs. Thus, participants who showed strong or weak bias on one kind of IAT (e.g., having to do with race) tended to show a similar strength of bias on other IATs (e.g., having to do with taste). These data cannot be explained in terms of the strength of the underlying associations, but rather must be due to differing levels of skill at meeting the task demands of the IAT (e.g., resolving incompatible influences on response). It also seems unlikely that these skilled individuals have automatized control in each of the different content domains tested in the research. Instead, it would appear that some individuals are simply better able to implement control in performing the task.

Intentional Regulation

Other research has demonstrated that conscious intentions to avoid bias can be effective. Kawakami et al. (2000) showed that, after hundreds of trials of intentionally negating stereotypes, participants showed weaker automatic stereotyping effects. We (Sherman et al., 2008) performed a similar training study and examined the effects on IAT performance. Replicating Kawakami et al. (2000), we found that negation training reduced implicit bias. Application of the Quad model to the data showed that the training not only weakened participants' automatically activated associations (AC), but also improved their ability to determine the correct response (D).

Neuroscientific evidence of control. Finally, there also is growing neuroscientific evidence for the role of control in implicit attitudes. Using fMRI, Chee and his colleagues (Chee, Sridhar, Soon, & Lee, 2000; see also Luo et al., 2006) showed that performing an insect-fear IAT involves the left dorsolateral prefrontal cortex (DLPFC) and the anterior cingulate cortex (ACC). Whereas the DLPFC is associated with inhibitory processes, the ACC is associated with conflict detection and resolution processes. Both types of processes are considered to be executive, controlled operations.

Using fMRI, Richeson and his colleagues (Richeson, Baird, Gordon, Heatherton, Wyland, Trautman, & Shelton, 2003) showed the involvement of the DLPFC when White participants were simply exposed to Black faces. This suggests that mere exposure to targets of potential bias is sufficient to instigate controlled processes. Moreover, the extent of DLPFC activation was related to the strength of implicit prejudice. Thus, participants with the strongest implicit prejudice apparently worked the hardest to control their behavior. These efforts were shown to deplete regulatory resources on a subsequent Stroop Task.

Also using fMRI, Cunningham and his colleagues (Cunningham, Johnson, Raye, Gatenby, Gore, & Banaji, 2004) reported the involvement of the PFC and the ACC when White participants were exposed to Black and White faces. Moreover, activation in these regions modulated the extent of amygdala activation when the faces were presented for 525 ms (vs. 30 ms). The amygdala is associated with automatic emotional reactions and has been shown to correlate with implicit racial bias (see also Phelps et al., 2000). This suggests that the PFC and ACC were actively regulating affective responses produced by exposure to Black and White faces, at least when there was sufficient time for control to engage.
show the results of the experiment. The findings indicate a significant improvement in performance for participants who received the practice prior to the test. The data suggests that practice can enhance memory retention and overall performance. Additionally, the results highlight the importance of engaging in active learning and practice to achieve better outcomes.
Conclusion

been overestimated. To control the magnitude of the association, we have implemented an approach that adjusts for potential confounders. The 2000 Experiment 2 in some this research indicates that the reality of the difference in its magnitude and direction, particularly for the perceived difference in the overall effects.

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programs, we are measuring program impact, service delivery,
and the effects of various factors on the growth of programs.

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