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## **Validating Cognitive and Emotional Urges in Comprehending One's Surroundings: The Case of Attraction from Attitudes<sup>1</sup>**

### **Abstract**

Durganand Sinha had found that attitudes formed from a preceding experience influenced participants' responses to the succeeding one in a laboratory experiment on memory (Davis & Sinha, 1950). He had also found that the Darjeeling people affected by the 1950 landslide spread rumors to make sense of their surroundings via cognitive and emotional responses (Sinha, 1952). In this chapter, the author pays his tributes to Sinha by making a new case for the importance of attitudes-and-attraction experiments in bolstering his earlier findings. That attitude similarity effects on attraction are stronger when correctness of the participant's views are objectively unverifiable rather than verifiable matches with the evidence for efforts about meaning among the Darjeeling residents in the absence of reliable information. Likewise, validation of one's attitudes by peers and then experiencing positive affect in attraction represent the very same respective cognitive and emotional urges of the Darjeeling people during the post-landslide period. These findings validate Sinha's views on the prevalence of attitude-driven responding, fusion between responses, and sequential relation between cognitive and emotional urges in everyday life.

*Keywords:* cognition, emotion, parallel-mediation, sequential-mediation, validation

### **Background**

In the early 1980s, Durganand Sinha and I participated in a national symposium on *Experimental Social Psychology* at the University of Allahabad. In his chapter in the subsequently edited volume of the proceedings (Pandey, 1981), Sinha (1981) argued:

“The aim of social psychology is to understand and explain the social reality” (p. 217).

Byrne (1971) "... forced the subject [participant] to act as a passive information-processing machine than as an active agent who is information-seeking and information-generating. It amounts to a gross distortion of reality" (p. 220).

It is "... possible to have scientific neatness with social relevance if the scientist accepts the challenge of complexity posed by social phenomena, ... he faces the problem squarely, and brings his inventiveness from the point of view of precision, measurement, and demands of science at the same time meaningful and not divorced from reality" (p. 227).

In reply to his aforementioned observations, I argued in the symposium and subsequently wrote (Singh, 1981):

"... experimental social psychology has been criticized for its heavy reliance on experimentation as a research method. ... I take the position that ... [experimental] social psychology is to grow even more scientific in the years to come" (p. 229).

"The idea of similarity-attraction relation is not new, nor did Byrne claim it to be new. However, his simple paper-pencil experiment yielded evidence for an unambiguous causal link between attitude similarity and attraction. ... It is good to have internal validity, statistical conclusion validity, construct validity, and external validity in any causal inference" (p. 233).

A heuristic processing of the foregoing five quotations may result in erroneous opinions that Sinha (1981) was against performing experiments on social behaviors, and that I (Singh, 1981) was opposed to his advocacy. On the contrary, the facts are that Sinha started his research in psychology using experimental methods, and that I have been committed to experimental research throughout my career. In this chapter, therefore, I pay my tributes to Durganand Sinha<sup>2</sup> by making a case for (a) the importance of experiments in social psychology, (b) the order in which cognitive and emotional components of attitudes may operate in the interpretation of one's social milieu, and (c) the active and dynamic roles that humans always play in the laboratory and field studies in psychology.

### Memorial Lecture<sup>3</sup>

In the *Professor Durganand Sinha Memorial Lecture* in 2016, I revisited our 1980 debate by selecting two of Sinha's earlier articles. One was based on an experiment on memory in the laboratory (Davis & Sinha, 1950), and another was based on a survey of rumors in a naturalistic setting as well as two small experiments on transmission of factual statements to others and on perceptual judgments of a broken house (Sinha, 1952). Let me first describe those studies below.

In Davis and Sinha (1950), university students read or didn't read a story about family dynamics at Time 1, saw or didn't see a picture of a family wedding at Time 2, and recalled the contents of either the story or the picture at Time 3 spaced over 4 to 28 days and even a year. Recalls of the picture presented at Time 2 were highly influenced by the *attitudes* formed from the story read at Time 1. Likewise, many of Time 2 picture details *intruded* into Time 3 recalls of Time 1 story. It was noted that "... [recalls of] the story did not escape the influence of the stream of experiences which preceded and succeeded it" (p. 49). Stated simply, the seemingly *independent* attitude-induced schemata tended to *overlap and fuse* with one another.

Following the 1950 Darjeeling landslide, Sinha (1952) collected reports of rumors about essential supplies of electricity and water and plights of railways and roads among the affected people. In an experiment on transmission of rumors by tourists ( $N = 10$ ), he presented a factual statement about the damage and traced the distortions in reporting that information across people. In another experiment on perception of a damaged palatial house, he told tourists ( $N = 6$ ) that the house "looked crooked" and solicited their responses (p. 205). Rumors among the affected residents were exaggerated and conflicting as if they were trying to make sense of their immediate surroundings. Rumors transmitted by the participants in the experiment illustrated dramatization and exaggeration as well. Perceptual judgments by participants in the experiment evinced

imagined distortions in the crooked house, suggesting the role of anxiety and insecurity in spreading rumors in the region. Thus, Sinha agreed with Allport and Postman (1948) that rumors “... satisfy ... cognitive and emotional urge to understand and comprehend” (p. 206) one’s surroundings.

Three considerations guided my choice of the preceding two articles. First, as of December 8, 2016, they were among the most cited articles by Sinha. Second, Pandey (1998) had adjudged the 1952 article as “... an example of his [Sinha’s] scientific creativity and responsiveness to the problems of his immediate surroundings” (p. 691), and no less important, the ideas in both papers called for a fresh unraveling of the order of mediating influences on cognitive and emotional components of attitudes while acknowledging the complexity of *fusion between responses* that Davis and Sinha had pointed out (1950).

To me, the foregoing two articles by Sinha essentially made five points. First, humans actively seek and generate information instead of passively processing the information given. Second, they understand the social world through their attitudes. Third, people have cognitive and emotional urges to understand, predict, and control their environment. Fourth, the cognitive and emotional urges activated are often *related* (fuse, overlap) but *distinct* processes. Finally, psychologists should study people’s understanding of the reality.

In this chapter, I present evidence for Sinha’s early ideas and findings from recent experiments on attitudes-and-attraction (Singh et al., 2017), and reiterate the importance of experiments in accessing what may be an emergent reality in any setting. I further show that people seek validation of their attitudes through social comparison more when their views are physically unverifiable rather than verifiable, and that those who succeed in validating their attitudes feel positive and thus get attracted toward others. In particular, the cognitive (validation) and emotional (positive affect)

processes are not only *distinct* (i.e., correlated but empirically distinguishable) but also *sequential* (i.e., Validation→ Positive affect) in fostering attraction from similar attitudes.

### **The Attraction Paradigm**

Attitude—a central concept in social psychology—refers to a mental state that manifests itself by either positive or negative evaluation of an object, event, or a person by the individual person (Allport, 1935). Eagly and Chaiken (1993) reiterated the same when they defined attitude as “... a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (Eagly & Chaiken, 1993, p. 1). Thus, one’s attitude toward premarital sexual relations can be measured by a 6-point Likert-type scale as illustrated below.

#### **Premarital Sexual Relations** (Check one of the following six statements)<sup>4</sup>

1. \_\_\_ In general, I am very much against premarital sexual relations.
2. \_\_\_ I am against premarital sexual relations.
3. \_\_\_ I am mildly against premarital sexual relations.
4. \_\_\_ I am mildly in favor of premarital sexual relations.
5. \_\_\_ I am in favor of premarital sexual relations.
6. \_\_\_ I am very much in favor of premarital sexual relations.

Consistent with the prevailing operationalization of attitude, the top three statements of the scale are *anti* premarital sexual relations, but the bottom three statements are *pro* premarital sexual relations. Besides, the three statements on the either side differ in the magnitude of *disfavor* or *favor*.

Students enrolled in an introductory psychology module first participate in a *Survey of Attitudes* that includes multiple contemporary controversial issues such as premarital sexual relations illustrated above. When the participant arrives at the laboratory later on, he/she is

provided with a fictitious *Survey of Attitudes* allegedly completed by a same-sex unknown student. Before meeting that future interaction partner, the participant examines the faked attitude survey, forms an opinion of the partner, and then expresses attraction toward him/her along Likert-type scales (e.g., *interested in knowing, intention to meet, enjoying working together*, etc.).

The manipulations of similar *versus* dissimilar attitudes (i.e., the independent variable (IV)) depend upon how the participant himself/herself had responded to the scales in the initial *Survey of Attitudes*. The simulated similar attitude of the partner is always checked one step apart on the same side of the scale of the participant's own response. For example, if the participant's response was Statement 2 of the issue in the previous survey, then his/her hypothetical interaction partner's similar attitude would be either Statement 1 or 3 in the fictitious survey. In the case of the original endorsement of Statement 1 or 3, however, a similar attitude would necessarily be Statement 2.

A dissimilar attitude in the fictitious survey is always checked three steps apart and on the other side of the scale of the participant's own response. Thus, responses to Statements 1, 2, 3, 4, 5, and 6 of the above scale are made dissimilar by checking Statements 4, 5, 6, 1, 2, and 3, respectively.

Notably, the secretly prepared attitude survey is anchored at the participant's own attitudes to involve him/her deeply in information processing. For controlling variables confounding with the manipulated attitude similarity or dissimilarity, the actual meeting between the participant and the partner never takes place. Moreover, the simulated attitude survey removes the background information about the supposed interaction partner. Consequently, attraction response emanates from *only* the manipulated attitude similarity.

Since Donn Byrne's (1961) first experiment on attitude similarity and attraction on undergraduate students of psychology at the University of Texas, Austin, it has repeatedly been

found that the greater the similarity between attitudes of two persons, the greater the attraction between them (e.g., Byrne & Nelson, 1965; Montoya & Horton, 2013; Singh, 1974; Singh & Ho, 2000; Tan & Singh, 1995). Further, that very experiment led to establishment of the attraction paradigm in which the emphasis was essentially "... on the way in which research is conducted [in personality and social psychology] and on the way in which both theoretical and applied research may be seen to grow out of a base relation[ship]" (Byrne, 1971, p. 414). However, Sinha (1981) felt uncomfortable with *artificiality* and *simplicity* created in such experiments because the individual participant might have been turned into "a passive information-processing machine" (p. 220).

### **Active versus Passive Information Processing in Experiments**

When a psychologist studies the effect of an IV or stimulus (S) on the dependent variable (DV) or response (R) without postulating any variable intervening between them as in the behavioristic S → R view (Skinner, 1953), the participant can undeniably be viewed as passive. However, when the IV effect on the DV is presumed to travel through one or more unknown variables within the organism (O) as in the S → O → R view (Woodworth, 1938), the human participant actively connects what had gone before a variable with what might come after it. Such a dynamic view on human mind was articulated by John Tyndall (1872), Chair in Natural Philosophy, Royal Institute, London, well before the founding of the Laboratory of Psychology at the University of Leipzig in Germany in 1879:

"Every occurrence in nature is preceded by other occurrences which are its causes, and succeeded by others which are its effects. The human mind is not satisfied with observing and studying any occurrence alone, but takes pleasure in connecting every natural fact with what has gone before it, and with what is to come after it" (p. 1).

A latent variable that transmits the known IV effect to the measured DV is called mediating variable (MV) (Baron & Kenny, 1986). Evidence for an MV implies an active rather than passive role of the participant. Supporting such an interpretation, the post-1986 experiments identified several mediators of attitude similarity effects on attraction. For example, positive affect (Singh, Chen, & Wegener, 2014; Singh, Ng, Lin, & Tan, 2008; Singh, Yeo, Lin, & Tan, 2007), inferred attraction (Condon & Crano, 1988; Singh, Yeo et al., 2007; Singh et al., 2008, 2014), respect (Montoya & Horton, 2004; Singh, Ho, Tan, & Bell, 2007; Singh et al., 2014), and trust (Singh, Tay, & Sankaran, 2016; Singh et al., 2015, 2017) have all been found to be the mediators. Therefore, I regard the participants in the attitudes-and-attraction experiments as *cognitively affluent and dynamic people* (Singh et al., 2014, 2015, 2017) rather than *passive information processing machines* (Sinha, 1981) as discussed and illustrated next.

### **Validation in Similarity-Attraction**

To Sinha (1952), “The prevalence of so many conflicting reports was due to *the absence of reliable information [emphasis mine]* about the condition of the railway, roads, electricity and water” (p. 207) in Darjeeling. I interpret those conflicting and exaggerated rumors characterized by dramatization and imagined distortions among the victims and tourists as their *on-the-spot* or *context-sensitive attitudes* formed. Given the uncertainty about the correctness of those attitudes, moreover, people in the region might have been pursuing what White (1959) termed *effectance motivation*, that is, an urge for certainty and a feeling of being able to know, predict, and control one’s environment (Byrne & Clore, 1967).

Humans tend to evaluate themselves and others against objective or physical standards that are readily available (Singh, 2020). For evaluating their beliefs and opinions, however, physical standards rarely exist. According to Festinger (1950), “... an opinion, a belief, an attitude is

‘correct,’ ‘valid,’ and ‘proper’ to the extent that it is anchored in a group of people with similar beliefs, opinions, and attitudes” (p. 272). Hence, people look to opinions of peers as a benchmark for identifying “correct” opinions (Festinger, 1954). One way of doing so is to learn that another person holds similar attitudes (e.g., Petrocelli, Tormala, & Rucker, 2007).

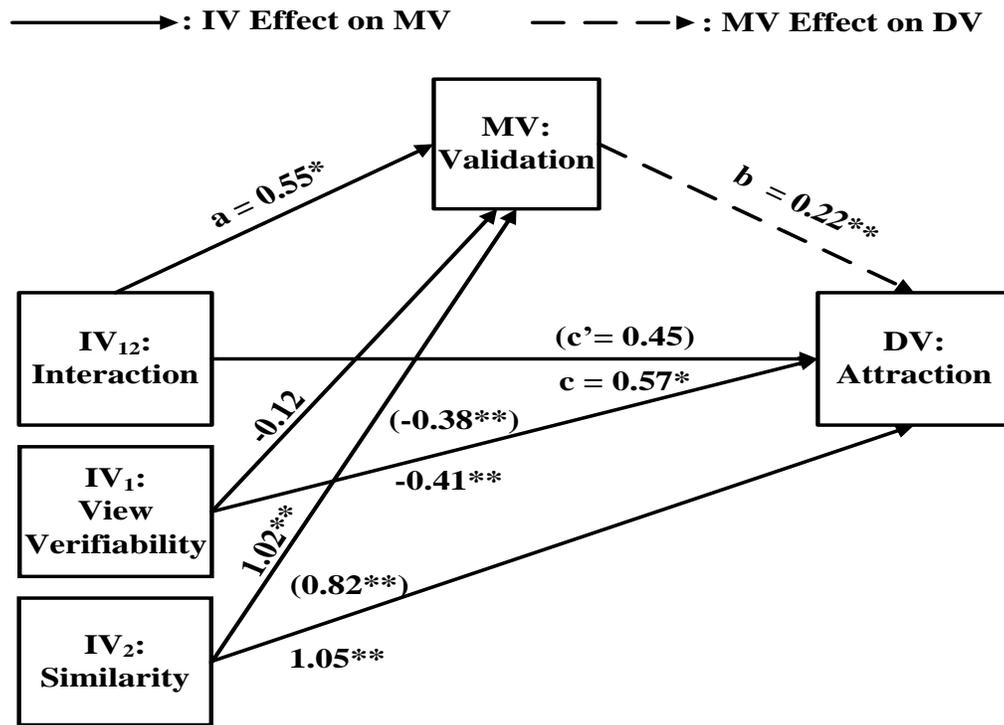
When similarity with peers signals correctness of one’s views and that correctness satisfies a motive for accuracy, certainty, desirability, prediction, and/or control of one’s environment (Heider, 1958; Festinger, 1954; Pittman, 1998; Singh, 2020; White, 1959), then validation by agreement should draw people together. Such validation is particularly needed when there is no objective standard for checking on belief or rumor accuracy as in Sinha (1952) also. Thus, validation-driven attraction effects would be stronger when the accuracy of one’s views is physically unverifiable than verifiable. Consistent with this possibility, Byrne, Nelson, and Reeves (1966) had reported that attitude similarity effects on attraction were stronger when accuracies of one’s views were low rather than high in physical verifiability.

Singh et al. (2017, Experiment 1) refined the foregoing finding in a novel way. They crossed view verifiability<sup>5</sup> with similarity between the partner and the participant. Further, they measured participants’ perception of the other’s views validating their own before asking how attracted they felt toward the stranger.<sup>6</sup> They predicted both the validation and attraction responses to be influenced more strongly by similarity when the views expressed were low (i.e., an attitude) rather than high (i.e., a fact) in verifiability. If validation does mediate similarity effects on attraction, then conditional mediation effects of similarity via validation should be stronger when participants’ views pertained to unverifiable attitudes than objectively verifiable facts (i.e., moderated mediation; Muller, Judd, & Yzerbyt, 2005).

In two confirmatory factor analyses (CFA) of the responses to the four validation and four attraction items in AMOS, Singh et al. (2017) did find a much better fit of the two-factor rather than the alternative single-factor measurement model to the data:  $\chi^2_{\Delta}(1) = 282.36, p < .001$ . The correlation between the two responses was also moderately positive,  $r(182) = .44, p < .01$ , indicating that validation and attraction were correlated but distinct constructs. This finding supports the possibility of fusion yet distinction between responses that Davis and Sinha (1950) envisaged.

More interestingly, similarity effects on the validation and attraction responses were stronger when the participants' views were about unverifiable attitudes than verifiable facts. That led to a PROCESS Model 4 analysis of mediation in SPSS (Hayes, 2018). The centered interaction term served as  $IV_{12}$ , the two centered main effect variables of verifiability ( $IV_1$ ) and similarity ( $IV_2$ ) as the covariates, validation as the MV, and attraction as the DV. The 95% confidence interval (CI) of the indirect effect of attitude similarity via validation ( $IE =$  the path coefficient for the  $IV_{12}$  effect on the MV ( $a$ )  $\times$  the path coefficient for the MV effect on the DV when both the  $IV_{12}$  and the MV jointly predict the DV ( $b$ )) was generated using 5000 bootstrap resamples. An  $IE$  was accepted as statistically significant only when its biased-corrected 95% CI excluded zero.

In Figure 1, I display the unstandardized regression coefficients from the foregoing analysis. Note that the path coefficients from  $IV_{12} \rightarrow MV$  ( $a$ ) and  $IV \rightarrow DV$  ( $c$ ) were statistically significant; so was the path coefficient from  $MV \rightarrow DV$  ( $b$ ). The interaction effect in validation reliably mediated the interaction effect in attraction,  $IE = 0.12, 95\% \text{ CI: } 0.01, 0.33$ . Importantly, the conditional indirect effects of similarity on attraction through validation were stronger when the manipulated views were about attitudes low in verifiability,  $IE = 0.29, 95\% \text{ CI: } 0.07, 0.55$ , than about facts high in verifiability,  $IE = 0.17, 95\% \text{ CI: } 0.05, 0.36$ .



*Figure 1.* The unstandardized regression coefficients from the moderated mediation analyses of the interaction ( $IV_{12}$ ) between view verifiability ( $IV_1$ ) and similarity ( $IV_2$ ) in validation (MV) and attraction (DV). The significant coefficients from (1)  $IV_{12} \rightarrow MV$  ( $a = 0.55^*$ ) and (2)  $IV_{12} \rightarrow DV$  ( $c = 0.57^*$ ) were necessary for the moderated mediation analysis performed. The coefficients in parentheses are direct effects.  $*ps \leq .05$ ;  $**ps \leq .01$ . Copyright © 2017 IARR and Wiley. Adapted from Singh et al. (2017), Experiment 1, Figure 2, p. 210, as per CCC Order No. 5094081346207 of June 22, 2021.

The foregoing results are important in two ways. First, they conceptually replicate an early finding of moderation of similarity effect by view verifiability in a new participant population in Asia and a much different period from that of Byrne et al.'s (1966) study in the United States of America. Second, and no less important, they demonstrate the mediating role of validation in attraction in a way never done before. While these results validate Sinha's findings of *fusion* between processes (Davis & Sinha, 1950) and *effort after meaning* among Darjeeling residents in

the absence of reliable information (Sinha, 1952), they also dispel his earlier doubt (Sinha, 1981) about realism in the settings or dynamism among participants in an experiment.

### **Validation Leading to Positive Affect but Not Vice Versa**

Byrne and Clore (1970) had abandoned validation for positive affect (from reinforcement by attitude similarity) as a mediator without investigating how the two constructs were related. That seemed premature because validation of one's attitudes by those of peers can actually bring about the very positive affect that was later proposed as necessary for attraction (Byrne, 1971). In fact, perceiving similarities with others validated one's own beliefs (Reis & Shaver, 1988) which, in turn, heightened one's positive mood in relationship satisfaction (Morry, 2007).

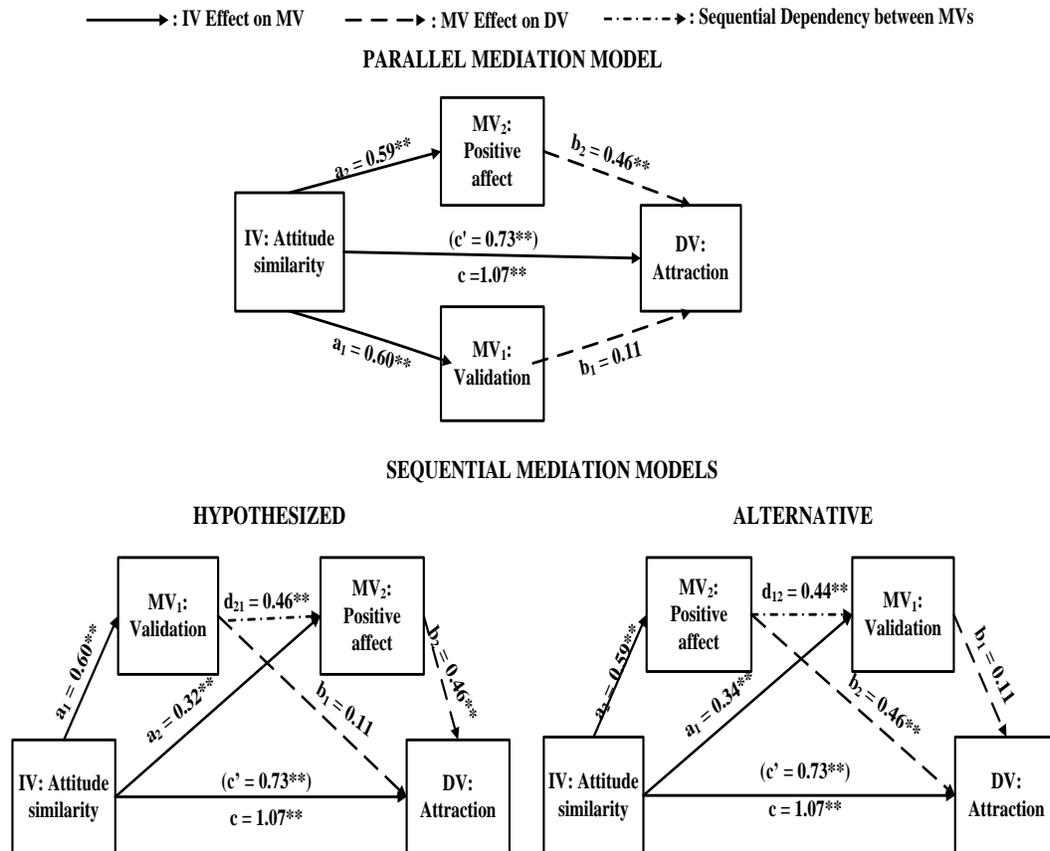
When positive affect lost out to the MV of inferred attraction and respect (Singh, Yeo et al., 2007) or inferred attraction, respect, and trust (Singh et al., 2015) in multiple-mediation model tests, it became theoretically and analytically important to revisit the early mechanisms of validation and positive affect in attraction. Such an experiment was crucial for also validating Sinha's (1952) view that both the cognitive and emotional urges drive one's understanding of the current surroundings.

In early reported mediation tests, positive affect qualified as an MV when it was used alone but not when it was pitted against other potential MVs (e.g., Singh, Yeo et al., 2007, Singh et al., 2015). Singh et al. (2015, 2017) attributed such anomalies to the widely used *parallel mediation model* in which the MVs are treated as equally *close* or *distal* to the DV and as independently carrying the IV effects to the DV (Singh & Rai, 2021). Given that the MVs and the DV were correlated but distinct constructs, Singh et al. (2017) argued for a *sequential mediation model* in which the effects of a preceding MV presumably also travel through the succeeding one.

Singh et al. (2017) proposed that validation may be the first response to the IV but the second response of positive affect may be influenced by both the MV of validation and the IV of attitude similarity. Because of the assumed serial dependency ( $d_{21}$ ) of positive affect ( $MV_2$ ) on validation ( $MV_1$ ), there would be an additional *IE* of the preceding MV via the succeeding one (i.e., *IE* via  $MV_1 \rightarrow MV_2 = a_1d_{21}b_2$ , Hayes, 2018, p. 171). Thus,  $MV_1$  that may not otherwise qualify as such in a parallel mediation model can instead be effective through  $MV_2$  in the sequential mediation model. If this explanation has any merit, then neither the parallel mediation model (see the top diagram of Figure 2) nor the alternative sequential mediation model in which positive affect precedes validation (see the bottom right diagram of Figure 2) can actually tease out the fusion that occurs between the two mediators.

Toward the foregoing goal, Singh et al. (2017, Experiment 2A) manipulated attitude similarity alone and measured validation ( $\alpha = .82$ ) and positive affect ( $\alpha = .70$ )<sup>7</sup> in counterbalanced orders before attraction ( $\alpha = .86$ ). The fit indices were again better when validation and positive affect were treated as distinct constructs in a CFA than when they were treated as the same construct,  $\chi^2_{\Delta}(1) = 37.44, p < .01$ . The correlations between pairs of three measures ranged from .45 to .54,  $ps < .01$ , again showing fusion yet distinction between responses (Davis & Sinha, 1950).

Attitude similarity effects on validation, positive affect, and attraction were statistically significant. The *IEs* of attitude similarity on attraction were also greater than zero when either validation,  $IE = 0.19$ , 95% CI: 0.08, 0.36, or positive affect,  $IE = 0.30$ , 95% CI: 0.15, 0.50, had served as a single mediator. When the two had served as parallel MVs as in the top diagram of Figure 2, however, validation lost out to positive affect (see Table 1 for the *IEs* and 96% CIs) as if Byrne and Clore (1971) were correct in abandoning validation of effectance motivation for positive affect from similar attitudes (Singh, 1974).



*Figure 2.* The unstandardized regression coefficients from the parallel mediation model (top diagram) as well as the hypothesized (bottom left diagram) and alternative (bottom right diagram) sequential mediation models for Validation (MV<sub>1</sub>) and Positive affect (MV<sub>2</sub>). The *a* and *b* coefficients across the three diagrams are the same. The new coefficients of *d*<sub>21</sub> and *d*<sub>12</sub> in the bottom left and right diagrams represent the sequential dependency of the succeeding MV on the preceding one. It is the *IE* of MV<sub>2</sub> that is actually partitioned into (1) the *IE* via MV<sub>1</sub> → MV<sub>2</sub> and (2) the *IE* via MV<sub>2</sub> alone in the hypothesized sequential mediation model. \**ps* ≤ .05; \*\**ps* ≤ .01. Copyright © 2017 IARR and Wiley. Adapted from Singh et al. (2017), Experiment 2A, Figure 3, p. 216, as per CCC Order No. 5094081346207 of June 22, 2021.

In test of the hypothesized sequential mediation by PROCESS Model 6 (Hayes, 2018), validation and positive affects were specified as MV<sub>1</sub> and MV<sub>2</sub>, respectively. In the alternative sequential-mediation model, their orders were exactly reversed. In the bottom left and right diagrams of Figure 2, I display the unstandardized regression coefficients for the respective hypothesized and alternative sequential-mediation models. In Table 1, I also report the *IE*s and

their corresponding 95% CIs from the three double-MV models tested. Evidently, validation determined attraction through its sequential effects on positive affect as in the hypothesized sequential mediation model but not in the other two alternative models.

**Table 1**

*Indirect effects (IEs) of Attitude Similarity via Validation and Positive Affect Along with Their 95% CI under Parallel and Sequential Mediation Models*

Models	Mediators	IE	95% CI
<i>Parallel Mediation Model</i>			
1	MV <sub>1</sub> : Validation	0.07 <sup>b</sup>	-0.02, 0.19
	MV <sub>2</sub> : Positive affect	<b>0.28<sup>a</sup></b>	0.15, 0.45
<i>Hypothesized Sequential Mediation Model</i>			
2	MV <sub>1</sub> : Validation	0.06 <sup>a</sup>	-0.02, 0.19
	MV <sub>1</sub> : Validation → MV <sub>2</sub> : Positive affect	<b>0.13<sup>a</sup></b>	0.06, 0.25
	MV <sub>2</sub> : Positive affect	<b>0.15<sup>a</sup></b>	0.03, 0.30
<i>Alternative Sequential Mediation Model</i>			
3	MV <sub>2</sub> : Positive affect	<b>0.27<sup>a</sup></b>	0.13, 0.47
	MV <sub>2</sub> : Positive affect → MV <sub>1</sub> : Validation	0.03 <sup>b</sup>	-0.01, 0.09
	MV <sub>1</sub> : Validation	0.04 <sup>b</sup>	-0.01, 0.14

**Note.** The IEs in bold are significantly greater than zero (i.e., the IE's biased-corrected 95% CI excluded zero). A model's IEs with different superscripts differ significantly from each other. Copyright © 2017 IARR and Wiley. Adapted from Singh et al.'s (2017) Table 4, p. 217 and Table 5, p. 218, as per Copyright Clearance Center (CCC) Order No. 5094081346207 of June 22, 2021.

As Byrne et al. (1966) originally envisaged, validation treated alone mediated between attitude similarity and attraction. When considered alongside positive affect, validation played a causal role in sequence of mediators leading from validation to positive affect but not vice versa. Stated simply, validation seems to have created attraction from attitude similarity in the IV → MV<sub>1</sub> → MV<sub>2</sub> → DV order alone. Accordingly, attitude similarity effects on attraction can now be

explained much better by recognizing validation as a precursor of positive affect in a much complex causal chain of other previously known mediators (Singh et al., 2015, 2017) than by altogether abandoning it for positive affect (Byrne & Clore, 1970). Evidence for correlation yet distinction between constructs and for a sequential relation between validation and positive affect in relationship development further solidify Sinha's early views (Davis & Sinha, 1950; Sinha, 1952) on causal role of attitudes, fusion between constructs, and interplay of cognitive and emotional urges in understanding of one's immediate surroundings.

### **More Mediators and Their Sequential Relation**

In both Figures 1 and 2, there are significant direct effects ( $c'$ ) of attitude similarity on attraction. What does such a partial mediation by either validation or validation and positive affect considered together as  $MV_1 \rightarrow MV_2$  order imply? Perhaps there are more mediators (Rucker, Preacher, Tormala, & Petty, 2011) than what were considered in these experiments. This possibility has merit because inclusion of trust (Singh et al., 2015, 2017) in multiple-MV tests rendered the direct effects of attitude similarity as nonsignificant. To me, validation and positive affect are early occurring processes that boost effectiveness of other later occurring cognitive MVs of respect (Montoya & Horton, 2004; Singh, Ho et al., 2007), inferred attraction (Condon & Crano, 1988; Singh, Yeo et al., 2007), and trust (Singh et al. 2015, 2017). Thus, attraction can be fostered by manipulating some of the distal MVs and measuring the MV of trust proximal to attraction.

When positive affect (Singh Yeo et al., 2007; Singh et al., 2008, 2014) and inferred attraction (Condon & Crano, 1988; Singh, Yeo et al., 2007; Singh et al., 2008, 2014, 2015)—the two known MVs of similarity-attraction—themselves were manipulated as IVs and the trust ( $\alpha = .86$ )<sup>8</sup> and attraction ( $\alpha = .90$ ) responses were used as the MV and the DV, respectively, the interaction effect in trust fully mediated the interaction effect in attraction (Singh, Teng, Bhullar,

& Sankaran, 2018). While the interaction between the two manipulated MVs confirmed their sequential dependency, moderated mediation by trust reiterated proximity of trust to attraction (Singh et al., 2015, 2017).

The foregoing findings from correlational (Hayes, 2018) and experimental (Spencer, Zanna, & Fong, 2005) tests of sequential mediation open a new avenue of sustaining or modifying the attraction paradigm (Byrne, 1971). Likewise, they suggest that *rumors exaggerated with a core truth, pure fabrications, religious interpretations, and/or predictions* by Darjeeling residents along with their *anxiety* and *insecurity* (Sinha, 1952) might have been sequentially dependent cognitive and emotional responses to their plight created by the rather unusual landslide. Thus, causal inferences from attraction experiments can be adjudged to have all four types of validity of *internal, construct, statistical conclusion, and external* (Cook & Campbell, 1976).

### **General Discussion**

The debate between Durganand Sinha and me in the early 1980s was on whether experimental social psychology can capture the important features of social phenomena. Throughout my career, I have firmly held that experiments can. The 1980s debate only jolted my research in directions I wouldn't have otherwise taken, including exploration into some of Sinha's earlier ideas. The obvious outcome is that we know much better now than before about what those psychological processes are and how they are related in interpersonal attraction (Singh et al., 2014, 2015, 2016, 2017, 2018).

In more general terms, people are as active and dynamic information processors in laboratory (Singh, 1991, 2011) as they are in real life (Sinha, 1952; Singh, 2020). They navigate and master the social world through cognitive and emotional processes. The key contribution of recent attitudes-and-attraction experiments thus lies in validating Sinha's (Davis & Sinha, 1950;

Sinha, 1952) earliest findings of importance of attitudes, fusion between responses, and relation between cognitive and emotional urges driving one's understanding of the environment. Such similarity between the early views of Sinha and those of mine have been keeping us attracted (Byrne, 1961, 1971) rather than repelled (Rosenbaum, 1986; Singh & Ho, 2000) in spite of our earlier debate (Sinha, 1981; Singh, 1981).

Regarding Sinha's (1981) recommendation for always investigating the reality, I could not find a better answer than what Alison Ledgerwood (2016), Professor of Psychology at the University of California, Davis, USA, had suggested for improving research practices in psychological science:

“Any set of results, whether empirical or simulated, give us only a partial picture of reality. Reality itself is always more complex. If we want to study it, we need to be honest and open about the simplifying choices that we make so that everyone—including ourselves—can evaluate these choices, question them, and explore what happens when different choices and assumptions are made” (p. 663).

To the above, it can be added that the evidence for precedence of validation to positive affect in attraction from attitudes coming from rather simple experiments, a simplifying choice by me, does represent behaviors of people active on social media websites (e.g., *Facebook*, *Twitter*, *WhatsApp*, *etc.*) across the globe. Isn't it possible that the number of “likes” from peers one receives--a kind of validation—for every post on social media platforms actually makes him/her “feel happy” (i.e., positive affect) (see, e.g., Chen & Sharma, 2015; Zell, & Moeller, 2017)? Through a proper conceptualization and operationalization of variables and responses to such social media platforms, future researchers can also validate or refute the findings of the experiments performed heretofore on relationship development (Singh et al., 2014, 2015, 2016, 2017, 2018).

The convergence of my recent findings with those of Sinha (Davis & Sinha, 1950; Sinha, 1952) has a message to younger generation of psychologists as well. Those who are unfamiliar with the processes already identified or may view older works not as good as newer ones, ought to revisit the past literature. As Ivan Clarke (2016), Professor of Physiology, Monash University, Australia, had correctly written on his blog:<sup>9</sup>

“I have met young scholars who are not familiar with earlier literature and they think that older works are not as good as newer ones. That is simply not true. Many old scientific papers were very well-written, applied the same scientific rigor, and their processes were just as valid as today’s experiments. They can be very valuable to any researcher.”

I believe the same about the initial contributions of Sinha (Davis & Sinha, 1950; Sinha, 1952) to psychology.

### **A Tribute**

I am indeed privileged and blessed that I got to know Durganand Sinha who positively influenced my personal and professional lives. I am also fortunate to be among those who still carry forward his theoretical and methodological bequests to psychological science in India (Pandey, 1998; Misra, 1998; Mishra, 2017; Naidu, 1992). I wish Durganand Sinha were among us today to see how I have steadily been responding to his challenges to experimental social psychologists in India (Sinha, 1981)! I miss him dearly.

### **End Notes**

1. Based on the author’s *Professor Durganand Sinha Memorial Lecture* at the 26<sup>th</sup> Annual Conference of the National Academy of Psychology (NAOP) held on December 30, 2016 at the Indian Institute of Technology, Madras and his subsequent journal publications. This version has benefitted substantially from comments and suggestions of Shivganesh Bhargava, Naureen Bhullar, Braj Bhushan, Colleen F. Moore, Sudhir Kumar Pandey,

Mahendra Singh Rao, Kumar Rakesh Ranjan, Krishna Savani, Jai B. P. Sinha, Rakesh Kumar Srivastava, and Ritu Tripathi. I am grateful to each one of them.

2. Professor and Head, Department of Psychology, University of Allahabad, Allahabad, Uttar Pradesh (1961-82) and Director, Anugrah Narayan Sinha Institute of Social Studies, Patna, Bihar (1982-87) in India.
3. Naidu (1992) portrayed Durganand Sinha as an “institution of psychology in India” (p. 1), a leader of “indigenization of psychology” (p. 2), and “a representative of the Indian and Third World points of view in international congresses” (p. 3). In two obituaries, Sinha was also remembered for “... his powerful influence on the people with whom he interacted and collaborated” (Pandey, 1998, p. 694) as well as for changing “... the framework and climate of doing research by advocating a dialogue between text and context, theory and practice, and culture and psychology” (Misra, 1998, p. 8). In a book on eminent Indian psychologists, Mishra (2017) noted that Sinha “... drew perspectives from economics, sociology, political science, history and anthropology and integrated them in the psychology he did, practiced, encouraged and pleaded for” (p. 123). Given such greatness of Durganand Sinha, I was honored and delighted by the opportunity to deliver his memorial lecture and to write this chapter. I thank Janak Pandey, Premanand Sinha, Snehanand Sinha, and Rama Charan Tripathi for thinking of me.
4. In the actual and fictitious surveys, the six statements are never numbered 1 to 6. I have numbered them in this scale to describe in simple terms how similarity and dissimilarity of views between the participant and the partner are manipulated.
5. In the condition of high view verifiability, the six positions a person could take on each issue (e.g., *social networking websites*) represented the participant’s level of confidence in

a fact about it (e.g., I extremely doubt that the first social networking website was launched in 1997; ... doubt ...; ... slightly doubt ...; I am slightly certain ...; ... certain ...; and ... completely certain ...). In the condition of low view verifiability, in contrast, the six positions a person could take on each issue represented an attitude toward the object or issue (e.g., I am very much against the use of social networking websites; ... against...; ... mildly against ...; ... mildly in favor of ...; ... in favor of ...; and very much in favor of.).

6. Items of validation measure: *confirmed, assured, validated, and approved*, Cronbach alpha ( $\alpha$ ) = .87); Items of behavioral attraction: *I would like to meet my partner; ... get to know this person better; I look forward to meeting my partner; and ... enjoy working with my partner*,  $\alpha = .92$ .
7. Items of positive affect measure: *active, attentive, inspired, and determined* (Egloff, Schmukle, Burns, Kohlmann, & Hock, 2003).
8. Items of trust measure: *This partner would make me feel secure; . . . act benevolently toward me; . . . look out for my interests, and I would find this partner to be a dependable person* (Singh et al., 2015).
9. Clarke, Ivan. How old is too old? No matter the age, the science matters. <https://blog.sciencedirect.com/posts/how-old-is-too-old-no-matter-the-age-the-science-matters>. October 27, 2016, 12.30PM

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