

AN INTERACTIONIST APPRAISAL OF IMPRESSION FORMATION The "Central Trait" Hypothesis Revisited¹

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This article examines the nature of first impressions from the interactionist perspective. A modified H. H. Kelley design (1950) of student-teacher interaction was employed with a sample of 195 college students. The findings demonstrate the overall complexity of the impression-forming process as well as illustrate the limitations of the warm-cold variable in predicting actual behavior. Several central traits are observed to be operative in impression formation. These traits are observed to be a function both of preinformation and response alternatives in the adjective checklist. Symbolic and observational presentation is found to be more influential in forming impressions with behavioral implications than those formed solely by observational exposure. Both consideration of the context of interaction and central trait identification appear necessary to specify the behavioral component of impressions.

Theoretical Framework

The interactionist perspective sheds needed light on the study of the formation and implications of first impressions. Briefly, this orientation asserts that social interaction proceeds on the basis of situational and personal definitions (Thomas, 1923; and Blumer, 1962). That is, in order for an individual to interact with another in some meaningful fashion, both must define not only the situational context of the interaction, but each must further define the other relative to the situation as well as their reciprocal relationship to one another. To make this process possible, a continual supply of information from the external environment is needed. This information can be obtained directly (experience) or indirectly (attitudes and opinions of others). Situational dynamics effect a continual revision of definitions² in accordance with new inputs of information. It is on the basis of these definitions that individuals tend to orient their behavior.

From a theoretical standpoint, the impression literature focuses about two assumptions. It is asserted, first of all, that first impressions tend to be built upon an organizational skeleton of "Central Traits" (Asch, 1946; Kastenbaum, 1951; Mensch and Wishner, 1947; and Veness and Brierley, 1963). These central qualities may act to influence the overall Gestalt of the impression (Triandis and Fishbein, 1963; Fishbein and Hunter, 1964; and Bruner, Shapiro, and Tagiuri, 1958); or condition on averaging of other traits to form the final impression (Anderson, 1965; 1966; and 1967). Secondly, it is suggested that impressions, once formed, tend to be relatively consistent over time (Bruner and Tagiuri, 1954; Haire and Grunes, 1950; and

Cofer and Dunne, 1952).

For the interactionist, however, there can be no static features of human social behavior. The individual continues to evaluate and act on the basis of his perceptions. As one's impressions change, so does his behavior. This point is aptly illustrated by Newcomb (1947) in the case of the autistic hostility hypothesis. This hypothesis suggests that an initial hostile attitude toward a person leads to a restriction of communication and contact with him, which in turn serves to preserve the hostile attitude by preventing the acquisition of data which could correct it. Implied here is the assumption that new information may alter the initial impression.

Empirical research in this matter has generally proceeded in two divergent directions. One tradition deals with stimulus materials of a hypothetical sort. By presenting a number of subjects (S's) with a description of a hypothetical person and gathering impressions of the stimulus person (SP) by means of an adjective checklist, Asch (1946) set the stage for much subsequent research. Kastenbaum, 1951; Mensch and Wishner, 1947; Veness and Brierley, 1963; Luchins, 1948; Dinnerstein, 1951; Gollin, 1958 and many others tend to follow the Asch design. In the same vein, Willis, 1960; Hastorf, Osgood, and Ono, 1966; and Rosnow, 1968, utilize photographs of a SP and then collect impression data from their S's. Kang (1971) makes use of video taped recordings and attempts to assess impressions following selective exposures to experimental and control groups. These studies indicate "warmth" and "coldness" to be significant central qualities about which impressions tend to be focused.

The second research tradition (much less employed than the first) is of more relevance to interactionist theory. The work of Kelley (1950) exemplifies this approach. Kelley introduced a new instructor to a series of three psychology classes using the pretext that the original instructor had been called out of town. Half of the S's in each class session received preinformation concerning the SP which was of a "warm" nature, while the other half received "cold" preinformation. The organization of first impressions was assessed by means of an analysis of descriptive protocols written by each student. Kelley's findings lend further support to the central trait hypothesis. Those presented "warm" descriptions tended to view the new instructor as more considerate, informal, sociable, popular, humorous, humane, and better natured than was the case with those given "cold" preinformation. In addition, those given "warm" preinformation tended to interact more frequently with the stimulus individual.

The present research follows the latter tradition. An attempt is made to assess the nature of first impressions in an actual interactive situation employing the presence of a real stimulus person. The Kelley design, although the closest case in point, is methodologically incomplete. The following study builds upon the Kelley model in a number of significant ways. The present design utilizes: (1) a larger sample; (2) a control group; (3) a broader conceptualization of interaction; (4) a single stimulus person; (5) controlled discussion material; (6) analysis of all descriptive protocols; (7) a statement of actual judgment relative to the impression formed; (8) a more appropriate rating scale for impression analysis; and (9) video tape analysis of experimental and control groups.

Methodology

The experiment was performed in three sections of a sociology course (Sociology I) at the University of Missouri - Columbia. The three sections provided 122, 47, and 26 students respectively. The majority were in their first or second year of college. Ninety of the S's were male; 105 were female. In each of the classes the SP (a male) was completely unknown to the students before the experimental period. The same individual served for all three sections. In the two experimental classes (n's 122 and 26) the stimulus individual was introduced by the experimenter who posed as a representative of the course instructors and who gave the following statement:

Your regular instructor is out of town today, and since we of Sociology I are interested in the general problem of how various classes react to different instructors, we're going to have an instructor today you've never had before, Mr. Cross. Then, at the end of the period, I want you to fill out some forms about him. In order to give you some ideas of what he's like, we have had a person who knows him write up a brief biographical sketch about him. I'll pass this out to you now and you can read it before he arrives. PLEASE READ THESE TO YOURSELVES AND DON'T TALK ABOUT THIS AMONG YOURSELVES UNTIL THE CLASS IS OVER.³

Two kinds of notes were distributed, the two being identical except that in one the SP was described among other things as being "rather warm" whereas in the other form the phrase "rather cold" was substituted. The content of the "warm" version is as follows:

Mr. Cross is a graduate student in the Department of Sociology and Rural Sociology here at the University of Missouri. He has had three semesters of teaching experience in sociology at another college. This is his first semester teaching Introductory Sociology at M.U. He is 31 years old, a veteran, and married. People who know him consider him to be a rather warm person, industrious, critical, practical, and determined.

The two types of preinformation were distributed randomly within each of the experimental groups, and in such a manner that the students were not aware that two kinds of information were being given out. In the control group (n = 47) no preinformation was provided relative to the SP. The SP then appeared and led each of the three classes in a twenty-minute discussion on the general topic of ecology.⁴ In both experimental and control groups a video tape recorder was made of how often (and in what manner) each student participated in the discussion. After the discussion period, the SP left the room, and the experimenter gave the following instructions:

Now, I'd like to get your impression of Mr. Cross. This is not a test of you and can in no way affect your grade in this course. This material will not be identified as belonging to particular persons and will be kept strictly confidential. It will be of most value to us if you are completely honest in your evaluation of Mr. Cross. Also, please understand that what you put down will not be used against him or cause him to lose his job or anything like that. This is not a test of him but merely a study of how different classes react to different instructors.

Table 1. Differences of Means and Point Biserial r's For "Warm" and "Cold" Observers' Ratings of Stimulus Person

High End of Scale ^e	Low End of Scale ^e	Difference of Means ^a (N = 195)	Cold-Warm Biserial r's ^f	r ²	Kelley's Difference of Means ^a (N = 55)
Knows his stuff	Doesn't know his stuff	-0.1	.07	.01	1.1
Considerate	Self-Centered	0.5	-.18 ^c	.03	3.3 ^d
Informal	Formal	0.3	-.07	.01	3.3 ^d
Modest ^b	Proud	0.5	-.18 ^c	.03	1.2
Sociable	Unsociable	0.9	-.33 ^d	.11	4.8 ^d
Self-Assured	Uncertain (self)	-0.1	.03	.00	0.7
Hi Intelligence	Lo Intelligence	0.1	-.03	.00	0.3
Popular	Unpopular	0.5	-.21 ^d	.04	3.4 ^d
Good Natured ^b	Irritable	0.6	-.21 ^d	.04	2.6 ^c
Generous	Ungenerous	0.6	-.29 ^d	.08	1.4
Humorous	Humorless	0.2	-.08	.02	3.4 ^d
Important	Unimportant	-0.3	.12	.01	1.9
Humane ^b	Ruthless	0.2	-.07	.01	2.4 ^d
Submissive ^b	Dominant	0.7	-.25 ^d	.06	1.3
Will go far	Will not go far	0.1	.04	.02	1.6

^aA positive difference indicates that those with "warm" preinformation rated the stimulus person higher and vice versa.

^bThese scales were reversed when presented to the subjects.

^cSignificance at $p = .05$

^dSignificance at $p = .01$

^eThe values for these scale items have been reversed from those originally employed in the Kelley study.

^fA negative correlation indicates a higher score for those S's receiving warm preinformation.

The S's then wrote free descriptions of the SP, rendered a direct judgment in response to a preformulated question regarding their impression of the new instructor, and finally rated him on a set of 15 rating scales arranged in a semantic-differential format.⁵ The present analysis employed the point biserial r as opposed to a t -test.⁶ The former technique measures both significance and strength of association.

Findings

The differences in the ratings produced by the warm-cold variable were consistent from one experimental section to the other. Consequently, the data from the experimental sections were combined by equating means (the S.D.'s were essentially identical) and the results were subjected to final analysis. Table 1 examines the differential ratings of the SP by "warm" and "cold" observers. A comparison is also provided with the earlier findings of Kelley (1950). While the study designs are not identical, the results do suggest comparative inference.

It will be observed that seven of the adjectives in the original scale are significantly associated with the type of preinformation presented. Those S's given "warm" preinformation tend to rate the SP as significantly more considerate, modest, sociable, popular, good natured, generous, and submissive, than those given "cold" preinformation. On the other hand, it will be noted that these relationships, although significant, are rather weak. The strongest association accounts for only 11 per cent of the variance in the dependent variable. These findings are generally in accord with those of Kelley. Kelley, however, reported significant associations in the case of the adjectives, "informal," "humorous," and "humane." He did not find a significant association in terms of "modest," "generous," or "submissive." In no instance does Kelley specify the strengths of these associations.

The picture becomes focused somewhat when experimental and control groups are asked to make a definite judgment of the new instructor.⁷ Table 2 illustrates the relationship between type of preinformation and the judgment made. It becomes apparent that those S's provided with "cold" preinformation responded quite differently from either the "warm" preinformation or no preinformation groups. The "cold" observers were much less willing to make a definite judgment than either the "warm" or no preinformation groups. Only 26.5 per cent of this group suggested the SP to be either warm or cold. Among this small percentage, however, the tendency was to rate the new instructor in the warm category. On the other hand, the "warm" and no preinformation S's were rather evenly divided in their judgments. The predominant tendency was to either rate the SP as warm or to reserve judgment on the matter. Although the chi-square value is not significant, it may, nevertheless, be inferred that there is some relationship between the type of preinformation and one's final impression. The "cold" observers seem to be making a compromise between a tendency to see the SP in a not uncomplementary fashion (a reaction present in the control group and probably in the culture at large) and the "cold" preinformation. This conclusion is upheld somewhat on the basis of post-experimental debriefings.

Table 2. The relationship Between Type of Preinformation and Judgment of The Stimulus Person^a

QUESTION: Would you say that Mr. C _____ is:										
Type of Preinformation Provided	Rather Warm		Rather Cold		Can't Tell		Don't Care		Totals	
	N	(%)	N	(%)	N	(%)	N	(%)	N	
None	18	40.9	4	9.1	19	43.2	3	6.8	44	100.00
Warm	30	37.5	4	5.0	40	50.2	6	7.5	80	100.00
Cold	11	16.2	7	10.3	42	61.8	8	11.8	68	100.00
Totals	59		15		101		17		192	

^aChi Square = 11.75, 6 d.f., $p = .10$

Summarizing briefly, it is observed that the degree of relationship between scale ratings and type of preinformation is significant in some instances. In all cases, however, these associations are decidedly weak. It is suggested that this fact may be due to the lack of effect of preinformation on the actual judgment. Although there appears to be a preinformation effect, it does not reach the level of statistical significance. It is well to point out that Kelley also found an interaction or compromise between the precognition and the stimulus. In the present study, this interaction appears to be a major component of the impression-forming process.

Table 3 presents comparisons of the point biserial r 's for each scale item and the three independent variables. These data suggest two things with regard to actual judgments. First, there is a much greater association between actual judgments of warmth or coldness and certain scale items (e.g., 1, 2, 5, 7, etc.). Utilizing this measure it is now possible to explain up to 38 per cent of the variance in the dependent variable. The data suggest, secondly, that the degree of association between warm or cold impressions varies greatly with each dimension of perception tapped. This fact argues against a "halo effect" interpretation of the findings. The warm-cold variable is more significantly related to some scale items than others.

Table 3. Comparisons of The Point Biserial r 's For Each Independent Variable and All Osgood Scale Items

Variable ^a	Preinformation- No Preinformation ^b (N= 191)	Preinformation: Warm-Cold ^c (N = 148)	Actual Judgment: Warm-Cold ^d (N = 73)
Knows His Stuff	.25 ^f	.07	-.37 ^f
Considerate	.06	-.18 ^e	-.61 ^f
Informal	-.08	-.07	-.08
Modest	-.24 ^f	-.18 ^e	-.18
Sociable	.06	-.33 ^f	-.61 ^f
Self-Assured	.24 ^f	.03	-.05
High Intelligence	.24 ^f	-.03	-.34 ^f
Popular	-.06	-.21 ^f	-.41 ^f
Good-Natured	-.08	-.21 ^f	-.60 ^f
Generous	-.03	-.29 ^f	-.48 ^f
Humorous	-.06	-.08	-.23 ^e
Important	.08	.12	-.26 ^e
Humane	.00	-.07	-.51 ^f
Submissive	-.24 ^f	-.25 ^f	-.13
Will go far	.25 ^f	.04	-.36 ^f

^aThese variable designations represent the "high" end of the scales employed.

^bA negative correlation indicates a higher score for those S's receiving no preinformation.

^cA negative correlation indicates a higher score for those S's receiving "warm" preinformation.

^dA negative correlation indicates a higher score for those S's responding with "warm" judgments.

^e $p = .05$

^f $p = .01$

Utilization of a control group made possible an examination of the effect of no preinformation as well as "warm-cold" preinformation on the impressions formed. Column one of Table 3 indicates significant differential effects of preinformation-no preinformation on scale ratings. Those S's receiving no preinformation rate the SP as being significantly more modest and submissive, whereas those receiving preinformation rate him as being significantly more self-assured, intelligent, knowing of his stuff, and a potential candidate for future successes (i.e., "will go far"). It will be noted, however, that the significant correlations in all instances are approximately the same size. These findings suggest still another dimension of personality which is affected by other items in the preinformation than simply the "warm" or "cold" adjectives. It is also apparent that this personality dimension is tapped in about half of the scales. A

factor-analytic technique was employed to separate out this second personality dimension.

Table 4 presents a four-fold factor analysis of all scale responses utilizing orthogonal factors. The results indicate two factors whose items are generally orthogonal to the independent variables, and two others corresponding roughly to those more strongly related to the independent variables. The latter include: (1) Competence-related items, associated with the presence of preinformation; and (2) a set of items which appear to be closely allied to warmth or coldness. These latter items are related to the type of preinformation and the nature of the actual warm-cold judgment. These findings argue, further, against an "halo-effect" explanation.

Table 4. Four-Factor Analysis of Osgood Scale Responses Utilizing Orthogonal Factors

Variable Number	Variable Name	Loading
COMPETENCE		
1	Knows his stuff	.71
4	Modest	-.42
6	Self-Assured	.65
7	High Intelligence	.74
12	Important	.56
14	Submissive	-.53
15	Will go far	.76
WARMTH/COLDNESS		
2	Considerate	.74
5	Sociability	.39
9	Good-Natured	.66
10	Generous	.58
13	Humane	.69
LIKABLENESS		
5	Sociable	.43
8	Popular	.59
11	Humorous	.56
UNPRETENTIOUSNESS		
3	Informal	.42
4	Modest	.38

It seems a safe assumption that the preinformation paragraph (which also utilized the words: "industrious," "critical," "practical," and "determined") functioned to describe the SP as a competent teacher, and that the S's utilized "competence" as a central trait as well as (and in some cases irrespective of) warmth or coldness in terms of organizing their impressions. Thus, it appears that Kelley's conclusions regarding warmth and coldness may have been premature as well as incomplete. In the present instance, the addition of a control group and a more sophisticated analytic technique point to not one, but two central traits functioning in impression formation.

The interactionist framework suggests an impression to have behavioral implications. In Kelley's earlier study, a significant association between type of preinformation and frequency of interaction was noted. The "warm" observers initiated interaction with the SP more often than did the "cold" subjects. The present research, because of its large N, chose to consider a broader conceptualization of interaction. In the following discussion, attempts to initiate interaction as well as completed interactions are analyzed.

Table 5 presents the effects of the type of preinformation on the S's willingness to interact with the SP. Little or no differences are observed in either interaction attempts or completions with those given "warm" as opposed to "cold" preinformation.

To take account of differential subsample n's, the ratios of interaction attempts and completions were considered. Section B of Table 5 utilizes a one-tailed test of significance. It can be seen that no significant differences exist between those receiving "warm" or "cold" preinformation and the ratios of either attempted or completed interactions. There is a significant difference, however, between the preinformation group and the no preinformation S's in terms of interaction attempts. Those given preinformation attempt to initiate interaction more frequently than those not provided with preinformation. These findings appear to substantiate the suggested influence of a second central quality. That is, the central trait of "competence" (suggested in the preinformation) appears to be more salient than the warm-cold variable in terms of influencing interaction. The preinformation apparently informs the S's that the guest instructor is worthy of interactive consideration.

Summary

While the present research has not discounted the presence and/or effect of the warm-cold variable in impression formation, it has (1) demonstrated the overall complexity of the process at hand; and (2) illustrated the limitations of this variable in predicting actual behavior. The findings have shown, for example, that other central traits are operative in impression formation. These central traits have been found to be a function both of the preinformation presented (Asch, 1946) and of the response alternatives provided in the adjective checklists (Wishner, 1960). Pre- (i.e., symbolic) information appears to be a decisive factor in conditioning the S's willingness to initiate interaction with a SP. Those provided with preinformation not only initiate more interactions but also tend to rate him higher on scale items. From these findings, it appears that symbolic and observational presentation is more influential in forming impressions with behavioral implications than those formed solely on the basis of observational exposure.

Table 5. Attempts and Completed Interactions with The Stimulus Person, by Preinformation

A) Attempts, Completions, and Interaction Ratios with Subsample N's

	Cold	Warm	None
Interaction Attempts	33	44	13
Ratio to Subsample N	.4852	.5500	.2765
Completed Interactions	24	27	13
Ratio to Subsample N	.3529	.3375	.2765
	N = 68	N = 80	N = 47

B) Differences of Ratios

	Warm Ratio	Cold Ratio	Preinfor- mation Ratio	No Preinfor- mation Ratio
Interaction Attempts	.55	.48	.52	.28 ^a
Completed Interactions	.35	.34	.34	.28

^aSignificant at $p = .0017$

Discussion

Three findings from the present research provide a measure of theoretical confirmation. First, a comparison of experimental and control groups provides illustration of the impression formed and the nature of the information utilized in the process. As will be recalled, those with only one source of information tended to rate the SP more favorably than the "cold" preinformation group. A similar, but less pronounced effect, was noted among the "warm" observers. This fact serves to suggest a modification of impression on the basis of new inputs of information. It also points to the stronger effect of observational exposure in terms of conditioning the final impression. It would appear that a significant proportion of those receiving preinformation withhold definite judgment on the basis of perceived inconsistencies between symbolic and observational data (see Table 2).

Secondly, analysis tends to confirm the central trait hypothesis of impression formation. It does, indeed, appear that impressions are focused about certain central qualities or traits. This research has pointed out, however, that a number of central traits contribute to the framework of impressions. While the warm-cold variable functions in the process, "competence" is seen as a more salient quality in the present study. The apparent complexity of impression formation is wholly consistent with the interactionist perspective (Bugental, Kaswan, and Love, 1970).

Finally, although the present research was unable to assess the interaction frequency of those indicating favorable judgments, it was possible to focus upon the interactive behavior of S's given different types of preinformation. In this instance, preinformation seemed to increase the probability of interaction. As was suggested previously, the preinformation appears to inform the S's that the SP is both competent and worthy of interactive consideration. In the classroom setting, this is a not unexpected finding. In another context, however, this may not be the case, i.e., the nature of the situation may emphasize one trait over another in terms of influencing interaction. It seems quite clear that consideration of both the context of interaction and central trait identification are necessary to specify the behavioral implications of an impression.

Footnotes

¹Revision of a paper read at the annual meetings of the Midwest Sociological Society in Kansas City, Missouri, April, 1972. Appreciation is expressed to Drs. Bruce J. Biddle and Charles H. Mindel for their assistance in critiquing this manuscript. Recognition and thanks are also due to teaching assistants John Hendricks and Keith Campbell whose cooperation made this study possible.

²"Impression" and "definition" are used synonymously in this paper.

³The words, ". . . so that he won't get wind of what's going on," (Kelley, 1950) were omitted. This addition, it was felt, would create an unduly tense situation in the classroom, biasing research results.

³"Ecology" was considered a general enough topic to permit interactive exchange with the SP if such was desired. Kelley's work fails to indicate whether the content of the twenty-minute

discussion was such that all class members would have sufficient information to venture an opinion in the matter.

⁵The semantic differential (Osgood, Suci, and Tannenbaum, 1957) was employed for two reasons: (a) the evaluative dimension has proven consistently to be the strongest on this particular instrument; and (b) seven-response categories seem intuitively to be of more value in assessing meaningful information, opinion, etc. than (Kelley's) 15-response categories.

⁶The point biserial is a relatively conservative statistic as it will never reach ± 1.0 and is always smaller than the biserial (Ferguson, 1966:239, 242, 244). See Labovitz (1967) for a discussion of the relative merits of using parametric statistical techniques with data of this type.

⁷Kelley drew his conclusions from analysis of the free report data for only one of his three sections. His findings were, therefore, based on an N of no larger than 23 (the size of his largest class). The present research analyzed all descriptive protocols and compared these with actual judgments (the S's were asked to state whether they saw the SP as, (a) "rather warm," (b) "rather cold," (c) "I can't tell," (d) "I don't care"). Only those responding to a or b (N = 73) were considered to have made definite judgments.

References

Anderson, N. H.

1965 "Averaging versus adding as a stimulus-combination rule in impression formation." *Journal of Experimental Psychology* 70:394-400.

1966 "Component ratings in impression formation." *Psychonomic Science* 6:279-280.

1967 "Averaging model analysis of set-size effect in impression formation." *Journal of Experimental Psychology* 75:158-165.

Asch, Solomon E.

1946 "Forming impressions of personality." *Journal of Abnormal and Social Psychology* 41:258-290.

Blumer, Herbert

1962 "Society as symbolic interaction." Pp. 179-192 in Arnold Rose (ed.), *Human Behavior and Social Processes*. Boston: Houghton-Mifflin.

Bruner, J. S. and R. Tagiuri

1954 "The perception of people." In G. Lindzey (ed.), *Handbook of Social Psychology*, Vol. 2. Cambridge, Massachusetts: Addison-Wesley.

Bruner, J. D., D. Shapiro, and R. Tagiuri

1958 "The meaning of traits in isolation and combination." Pp. 277-288 in R. Tagiuri and L. Petrullo (eds.), *Person Perception and Interpersonal Behavior*. Stanford: Stanford University Press.

- Bugental, D. E., J. W. Kaswan, and L. R. Love
1970 "Perception of contradictory meanings conveyed by verbal and non verbal channels." *Journal of Personality and Social Psychology* 16:647-655.
- Coffer, C. N. and J. T. Dunne
1952 "Personality ratings as influenced by verbal stimuli." *Journal of Personality* 21:223-227.
- Dinnerstein, Dorothy
1951 A Study of the Development of Certain Cognitive Structures. Unpublished Doctoral Dissertation, Graduate Faculty of Political and Social Science, New School for Social Research.
- Ferguson, George A.
1966 *Statistical Analysis in Psychology and Education*. New York: McGraw-Hill.
- Fishbein, M. and R. Hunter
1964 "Summation versus balance in attitude organization and change." *Journal of Abnormal and Social Psychology* 69:505-510.
- Gollin, E. S.
1958 "Organizational characteristics of social judgment: A developmental investigation." *Journal of Personality* 26:139-154.
- Haire, M. and W. F. Grunes
1950 "Perceptual defenses: Processes protecting an organized perception of another personality." *Human Relations* 3:403-412.
- Hastorf, A. H., C. E. Osgood, and H. Ono
1966 "The semantics of facial expressions and the prediction of the meanings of stereoscopically fused facial expressions." *Scandinavian Journal of Psychology* 7:179-188.
- Helmreich, R., E. Aronson, and J. LeFan
1970 "To err is humanizing--sometimes: Effects of self-esteem, competence, and a pratfall on interpersonal attraction." *Journal of Personality and Social Psychology* 16:259-265.
- Kang, J.
1971 *Recency in Forming an Impression: The Effect of a Simple Linear Combination of Symbolic and Observational Information*. Unpublished Doctoral Dissertation. University of Missouri, Columbia.
- Kastenbaum, Alice
1951 *An Experimental Study of the Formation of Impressions of Personality*. Unpublished Doctoral Thesis, Graduate Faculty of Political and Social Science, New School for Social Research.
- Kelley, H. H.
1950 "The warm-cold variable in first impressions of persons." *Journal of Personality* 18:431-439.

Labovitz, Sanford

1967 "Some observations of measurement and statistics." *Social Forces* 46:151-160.

Luchins, A. S.

1948 "Forming impressions of personality: A critique." *Journal of Abnormal and Social Psychology* 43:318-325.

Mensch, I. N., and J. Wishner

1947 "Asch on 'Forming Impressions of Personality': Further evidence." *Journal of Personality* 16:188-191.

Newcomb, T. M.

1947 "Autistic hostility and social reality." *Human Relations* 1:69-86.

Osgood, C. E., G. J. Suci, and P. H. Tannenbaum

1957 *The Measurement of Meaning*. Urbana: University of Illinois Press.

Rosnow, R. L. and R. L. Arms

1968 "Adding versus averaging as a stimulus-combination rule in forming impressions of groups." *Journal of Personality and Social Psychology* 10:363-369.

Thomas, W. I.

1923 *The Unadjusted Girl*. Boston: Little, Brown, & Co.

Triandis, H. C. and M. Fishbein

1963 "Cognitive interaction in person perception." *Journal of Abnormal and Social Psychology* 67:446-453.

Veness, Thelma and D. W. Brierley

1963 "Forming impressions of personality: Two experiments." *British Journal of Social and Clinical Psychology* 2:11-19.

Willis, R. H.

1960 "Stimulus pooling and social perception." *Journal of Abnormal and Social Psychology* 60:365-373.

Wishner, J.

1960 "Reanalysis of 'Impressions of Personality.'" *Psychological Review* 67:96-112.