Resolving Status Inconsistency: An Expectation States Theory and Test*

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ABSTRACT

Experimental studies associated with expectation states theories have demonstrated that people use various kinds of status characteristics (i.e., diffuse, specific task, or performance) to impute success probabilities to actors in collective-task situations. However, such inferences are complicated by the contradictory cues of differently evaluated status characteristics. Although researchers have debated whether actors resolve this inconsistency by balancing or combining status ranks, previous expectation states research suggests the conditional occurrence of each. This paper presents a reformulation of expectation states theory which takes into account the earlier trends in expectation states findings. Using a rationality assumption, expectation formation is conceptualized as hinging on a sum of actors' characteristics weighted according to the degree of their dissimilarity to the instrumental requirements of the group's task. Predictions are specified for a set of ten experimental conditions. These predictions are contrasted with those derived from the prominent graph-theoretic formulation of Berger et al. (c) which assumes only combining. Using a variation of the standard, two-phase expectation states experiment, tests of the predictions find consistently strong support for the new formulation, while producing disconfirming evidence for the graph-theoretic formulation under the conditions manipulated.

Status inconsistency has long been presumed to produce psychological stress which the individual has difficulty resolving. Its effects on such things as political attitudes (Lenski), self-evaluation (Segal et al.), health (Horan and Gray), and behaviors in group contexts (Zelditch et al.) have been extensively studied. In general, these various concerns may be divided into two categories: the effects on situationally specific behaviors resulting from interpersonal status inconsistency, and the psycho-physio-

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logical effects of social structural inconsistency. Particularly in the latter case, the results have been sufficiently ambiguous or disconfirming to lead some to suggest that the status inconsistency idea is bankrupt (Crosbie). However, what may in fact be bankrupt is the notion that individuals find status inconsistency resolution difficult. Indeed, experimental studies of situational behaviors have demonstrated the apparent ease with which resolution is achieved. In particular, the expectation states research indicates that individuals resolve the inconsistency between status ranks with little consternation. Nevertheless, what remains problematic is explicating the mode of that resolution. This paper focuses on this issue from the perspective of the expectation states theories.

Background

According to expectation states theory, in collective task situations (e.g., staff policy meetings, juries), interactants evaluate each others' abilities to contribute to task success. Those perceived as being most competent are usually given more rewards, more opportunities to participate, and more influence in the completion of the task than those perceived to be less competent. Lacking specifically relevant knowledge, the judgment of relative competence is determined by the status differences among the interactants. Characteristics which may differentiate actors by status ranks may include: *diffuse status characteristics* such as age, race, or sex (Berger et al., a), or *specific task characteristics* such as mathematical ability or visual acuity (Berger and Conner), or *performance characteristic sets* such as academician or baseball player—i.e., a set of two or more related specific task characteristics (Martin et al.).

Expectation states, or subjective success probabilities, are imputed to each task partner by each interactant consistent with the cultural evaluation of the states of the status characteristics possessed by each actor. A person higher in status than the other interactants is assigned a higher probability for success than those who are lower in status.

For instance, Berger et al. (a) conducted experiments using Air Force sergeants. All were in highly controlled problem-solving dyads. Some believed that they were working with Air Force personnel lower in status (airmen) than themselves, while others were led to believe they were working with partners higher in status (captains) than themselves. Consistent with the expectation states prediction, the sergeants who believed themselves to be working with a lower status partner rejected the partner's influence attempts much more often than did those who believed themselves to be working with a higher status partner.

Status inconsistency complicates this expectation formation process. Based on one characteristic, the actor is higher in status than the partner;

based on another, the actor is lower in status than the partner. The status differences connote contradictory expectations for task success. Consequently, resolving this inconsistency so that the interaction will be relatively free of conflict and yet successful becomes a problem.

Several studies have focused on this issue in an attempt to explicate the mode of resolution. Zelditch et al. found evidence that under some conditions actors appear to *combine*, or average, the inconsistent status ranks, while under other conditions, they appear to *balance* the discrepant ranks by ignoring one of the characteristics.

Freese and Cohen found that actors differentiated by two consistently evaluated specific task abilities (a general performance characteristic) and by a discrepantly ranked diffuse status characteristic (age) seemed to ignore the diffuse status characteristic (i.e., balancing) rather than combining the ranks. Martin et al. found that if subjects were differentiated by inconsistently evaluated specific task abilities (a performance characteristic set) and a discrepant diffuse status characteristic, the subjects appeared to ignore the ranks on the specific task abilities.

Webster and Driskell attempted a partial replication of Freese and Cohen in which they differentiated actors by race (rather than age) and the consistently evaluated performance characteristics. Their results indicate that subjects combine the inconsistent status ranks.

Berger et al. (b) found that subjects combined ranks on similar performance abilities. Subjects with consistently high ranks had higher influence rejection rates than actors with inconsistent ranks. Those with inconsistent ranks had higher influence rejection rates than those with consistently low ranks.

Although various investigators have tried to predict the mode of status inconsistency resolution, none has been able to account for several anomalous findings. However, recently several apparent but previously unacknowledged trends in the research have been extrapolated (Hembroff). The theoretical formulation and test offered here is based on those apparent trends. This formulation represents a theoretical extension of ideas presented in Freese and Cohen and Martin et al.

The Theory[1]

The reason individuals use status characteristics to impute relative task abilities appears to be that they provide a means through which to ensure the successful completion of the task. Therefore, this formulation will assume rationality on the part of the actors. That is, *the actors are assumed to use the least amount of information which optimizes the probabilities of success.* By deferring to the actor apparently most competent, the other actors believe they enhance the group's overall chance for success.

The various status characteristics of individuals have different performance expectations associated with each state of evaluation. For instance, in this society people with much education are higher in status and are expected to be more competent generally than are people with little education.

If a characteristic has not been explicitly dissociated from task success, then actors may impute *relevance* to it. That is, they will assume the characteristic conveys some information such that possessing one state of the characteristic implies possession of a corresponding state of an ability necessary for task success.

But a characteristic (diffuse status or performance set) may contain inconsistency among the evaluations of the elements comprising it. Both diffuse status characteristics and performance sets are made up of two or more elements. Diffuse status characteristics are comprised of sets of stereotypic qualities associated with the various states of the characteristics. A performance set is made up of two or more related abilities (specific task characteristics). If all of the elements in a particular set do not share the same state of evaluation then the characteristic is *inconsistent* within itself. For example, blacks are stereotypically perceived to be less intelligent (negative evaluation) but more athletic (positive evaluation) than whites.

The *degree of inconsistency, I,* of a characteristic is the proportion of the total elements in the set which have a contradictory evaluation. This is expressed mathematically as follows:

$$I = 2\left(\frac{n_x}{n_x + n_y}\right).$$

In this, $n_x + n_y$ is the total number of elements comprising the characteristic. n_x is the number of elements whose state of evaluation differs from that of the majority of elements in the set. Therefore, I can vary from 0 when all of the elements share the same state of evaluation to 1 when half of the elements are highly evaluated and the other half lowly evaluated (i.e., total inconsistency).

The *strength, S,* of a characteristic is a function of the degree of inconsistency among the elements of the set. The characteristic's strength locates the actor on the continuum representing the range over which the characteristic may vary. Mathematically, strength is defined as: $S = k(1 - I)$, where $k = +1$ if n_y is highly or positively evaluated, and $k = -1$ if n_y is lowly or negatively evaluated. Since it can be shown that $0 \leqslant I \leqslant 1$ and since S is a function of I, then the strength of a characteristic has the property, $-1 \leqslant S \leqslant +1$. The absolute value of the strength increases as the degree of inconsistency decreases. The strength is greatest, $|\pm 1|$, for a set comprised of consistently evaluated elements, such as a general performance characteristic (Freese and Cohen). It is weakest, 0, for a totally inconsistent set (Martin et al.).

The Freese and Cohen formulation assumed that actors imputed relevance to characteristics which differentiate actors by which known characteristics appear to be more similar to the instrumental task characteristic of the problem-solving situation. Freese and Cohen defined two characteristics as *similar* if they had not been excluded from symmetrical relation and from having the same state of evaluation. If either of these conditions is not met, then the characteristics are not similar: they are dissimilar.

The terms similarity and dissimilarity in the context of the formal theory have precise technical definitions which should not be confused with their common-language interpretations. Each characteristic is defined as a set of elements associated with the same entity. The similarity or dissimilarity of one set of elements to another is defined as being determined by whether any of the elements of the first set has been excluded from symmetrical relations with the elements of the second set; or whether any of those of the first set has been excluded from having the same state of evaluation as those of the second.

The Freese and Cohen definition of similarity concerns both substantive and evaluative dimensions of characteristics. Since a symmetrical relation is the result of associated stimuli rather than some objective quality inherent in the characteristics, then any characteristics may be perceived as similar provided the person has not specifically learned *not* to associate them. For example, an important part of the rationalization of production in industry has been the learning not to associate familial relationship with managerial competence. In part then, similarity may be viewed as a function of associatedness.

Regarding the latter part of the definition, if one characteristic were comprised of consistently evaluated elements while another characteristic were comprised of inconsistently evaluated elements, then the two characteristics are excluded from having the same state of evaluation; they are not similar. Since the degree of inconsistency among the elements in each characteristic set determines its strength, then the strengths of characteristics determines the extent to which the characteristics are excluded from having the same state of evaluations. Therefore, provided two characteristics have not been dissociated, if the strength of one characteristic is the same as that of another characteristic, they are similar. Conversely, if the strengths are not the same, they are dissimilar.

The *degree of dissimilarity, Q,* between two characteristics is represented by the absolute difference between the absolute value of the two characteristics' strengths: $Q = \left| |S_{ca}| - |S_{cb}| \right|$. Since S can vary from -1 to $+1$, then $0 \leq Q \leq 1$, where $Q = O$ means the characteristics are similar, and $Q = 1$ means the characteristics are totally dissimilar. The greater is the degree of dissimilarity between two characteristics, the less the imputed relevance of one for the other.

It will be assumed that the specific task characteristic instrumental to the group problem-solving situation is *the* element in a one-element set. Therefore, the strength of the instrumental ability is either +1 if that state of the ability results in success, or −1 if that state of the ability results in failure.

If the strength of the instrumental ability is ±1, then the degree of dissimilarity of any other characteristic to it is a function of the strength of that other characteristic. The degree of dissimilarity would be least when that other characteristic is consistently evaluated within itself (i.e., $I = 0$, $S = \pm 1$). The degree of dissimilarity would be greatest when that other characteristic is totally inconsistent within itself (i.e., $I = 1$, $S = 0$).

Suppose two actors are differentiated by each of two characteristics (as will be the case in the experiment reported here), a performance set P and a diffuse status characteristic D. Further suppose that each actor's rank on P is discrepant with his/her rank on D. This is the case we identify as status inconsistency. If P were similar to the instrumental task ability ($Q = 0$) while D were not ($Q > 0$), then the actors could safely ignore their respective ranks on D. If P were totally dissimilar to the instrumental task ability ($Q = 1$) while D were not ($Q < 1$), then the actors could safely ignore their ranks on P. These would constitute conditions where the balancing of inconsistency occurs.

But if neither P nor D is totally similar or totally dissimilar to the task ability, then ignoring one would be throwing away potentially relevant information and would increase the risk of an extreme error. Therefore, the discrepant ranks will be combined under these conditions. Furthermore, to equally weight characteristics which differ in their degrees of dissimilarity to the task ability also would be irrational. Therefore, *it is assumed that actors combine ranks weighted according to the degree of dissimilarity of the characteristic to that of the task.* The weighted strength of the less dissimilar characteristic becomes the principal basis for forming expectations about the relative probabilities for success on the group problem-solving task for self and other. The strength of the discrepant, more dissimilar characteristic tempers the expectation.[2]

Expectations for task success are induced by actors for self and other based on this weighted combining of status ranks. These estimated success probabilities, *expectation state values* (*ESV*), are formulated and assigned to each actor. The following formula has been devised to represent the hypothesized mode of combining of ranks in the expectation formation process: $ESV = \frac{1}{2} + \frac{1}{2}\left[S_{c1} + S_{c2}\,(1 - |S_{c1}|)\right]$. This formula is devised so as to result in values readily interpretable as probabilities. As such, *ESV* ranges from 0 to 1 inclusively, where $ESV = 1$ means there is an absolute probability of success, $ESV = 0$ means there is no probability of success, and $ESV = .5$ means there is an equal probability of success or failure. In the formula, S_{c1} represents the strength of the characteristic c_1 which is less dissimilar to the instrumental task ability than is the other characteristic c_2. S_{c2} represents the strength of the more dissimilar characteristic c_2. In a situation where actors are differentiated by a single characteristic, the strength of that one characteristic is represented as S_{c1}, and S_{c2} assumes a value of 0.

Acting in accordance with these subjective probabilities, the actor with the higher *ESV* will be given more opportunities, rewards, and influence than others in the group. The greater the difference between two actors' *ESV*s, the greater will be the emergent behavioral differentiation.

The particular form of the equation above is somewhat arbitrary in that it is a kind of stab in the dark attempt to describe the actual combining of characteristics. However, the formula does attempt to take into account the alternative interpretation of previous results noted in Hembroff. In particular, the formula was designed to take into account the evidence in the Freese and Cohen, and Martin et al. studies that suggested balancing as special limiting cases of the general combining principle. Notice that when *a general performance characteristic* ($S = |\pm 1|$) is counterposed to a diffuse status characteristic, the performance characteristic is the less dissimilar to the task ability of the situation. Therefore, $ESV = 1/2 + 1/2(S_{c1}) + 1/2(0)$, since $S_{c2}(1 - |1|) = 0$. This would be the same result as if only the general performance characteristic were known, thus indicating balancing. In the case of *a totally inconsistent performance set* ($S = 0$), the diffuse status characteristic has greater strength, is the less dissimilar, and thus is represented by S_{c1}. In this case also, $0(1 - |S_{c1}|) = 0$. Therefore, *ESV* would be the same as if only the diffuse status characteristic were known—indicating balancing again.

This report concerns conditions intermediate to those mentioned above. Here, the expectation formation process involves a performance set P which is neither totally consistent nor totally inconsistent ($0 < S_p < |\pm 1|$) counterposed to a discrepantly ranked diffuse status characteristic D.

To illustrate the operations discussed above, the following fictitious example is offered. The situation is intentionally fanciful for simplification and to avoid possible confusion or omissions which might result were an extant empirical example to be used. Let it be assumed that two residents of the planet Orbis are about to deliberate as jurors in a criminal case. One of the jurors is a Dreg (D), a minority group of relatively low esteem. Dregs are viewed as less intelligent, less ambitious, and less careful about hygiene than are the more highly esteemed majority group, the Hautes, although Dregs do seem to excel in music and athletics. The first three stereotypic traits associated with Dregs are negatively evaluated in comparison to Hautes while the latter two are positively evaluated. Thus, for the diffuse status characteristic,

$$S_{D_{Dreg}} = k\left[1 - 2\left(\frac{2}{2+3}\right)\right],$$

and since n_y are the negatively evaluated traits, then $k = -1$. Therefore, $S_{D_{Dreg}} = -.2$. Since the stereotypes of Hautes are simply the opposite of those for Dregs, then $S_{D_{Haute}} = +.2$. However, the two jurors are both academicians, a performance set *P*. The academician set is comprised of four equally weighted skills (at least on Orbis): teaching, research, grantsmanship, and committee work. The Dreg juror is good at the first three but not the fourth. The Haute juror is good at the fourth but not the first three. Thus, for the performance set,

$$S_{P_{Dreg}} = +1\left[1 - 2\left(\frac{1}{1+3}\right)\right] = +.5,$$

whereas

$$S_{P_{Haute}} = -1\left[1 - 2\left(\frac{1}{1+3}\right)\right] = -.5.$$

Since the absolute strengths of the performance sets are greater than those of the diffuse status characteristics, the performance sets become the S_{c1} in the *ESV* equation. In this case, $ESV_{Dreg} = \frac{1}{2} + \frac{1}{2}[(+.5) + (-.2)(1 - |+.5|)] = .7$, and $ESV_{Haute} = \frac{1}{2} + \frac{1}{2}[(-.5) + (+.2)(1 - |+.5|)] = .3$.

Since $ESV_{Dreg} > ESV_{Haute}$, then the Dreg juror most likely would have more influence on the deliberation outcome than would the Haute. However, if the two jurors had known only the performance information about each other, ESV_{Dreg} would have been +.75 while ESV_{Haute} would have been +.25. The diffuse status characteristic has reduced slightly the difference in expectations between them and, thus, the behavioral differentiation soon to follow.

Evaluating the Model

Testing the formulation is possible using a version of the standard expectation states experiment. The experiment is divided into two phases. The first phase involves the manipulation of the independent variables. Subjects are introduced to a fictional partner in such a way that the only information they have about self relative to the partner is their ranks on a diffuse status characteristic (age) or on a performance set (scores on tests of a fictional ability) or both. Subjects (between ages 17 and 21) to be differentiated from partner by age were introduced to a (videotaped) partner older (37 years old) than self (self = low status) or younger (11 years old) than self (self = high status). Subjects to be differentiated by performance sets took a series of interrelated tests of Contrast Sensitivity, a fictional general perceptual ability. Subsequently reported scores indicated that the subject had outperformed the partner on three of four tests (3*H*1*L*), or two of three tests (2*H*1*L*). Or the subject was said to have been outperformed by the partner on three of four tests (1*H*3*L*), or two of three tests (1*H*2*L*). In each case the partner's scores reflected the opposite performance.

Subjects to be differentiated by both the diffuse status characteristic and the performance set were given the tests, received the scores for self and partner, and were introduced to the partner so that the age differences were apparent. The subjects' ranks on the performance set and the diffuse status characteristic were discrepant.

The second phase of the experiment involves the subjects "and their partners" in a collective problem-solving task. They are asked to exchange initial opinions about an ambiguous attribute in a photographic slide. Subsequently, each has an opportunity to make a final decision about that slide. Subjects view forty slides. Since all opinions and decisions are communicated through an interaction control machine (ICOM), it is possible to make it appear that subject and partner almost always disagree initially.

In the standardized experiment, the dependent variable is a rate of influence rejection called a proportion of stay response, $p(S)$. It is the average proportion of times when, subject and partner having disagreed initially, the subject accepted the partner's opinion when making a final decision. The average rate is based on all subjects within that experimental condition. (For a more detailed description of the experimental procedures and rationale, see Freese and Cohen.)

As indicated above, ten experimental conditions were created. Table 1 summarizes the various differentiating information given subjects about self and partner in each condition. Only conditions 7–10 represent situations of status inconsistency. Conditions 1–6 are baseline conditions necessary to evaluate whether characteristics are combined as predicted by the theory in conditions 7–10.

Generating predictions from the theory for these exact conditions necessitates calculating and comparing the respective strengths of the various age and performance characteristics. The relative strengths of the performance and diffuse status characteristics will determine which is the more heavily weighted in the *ESV* formula. The strengths of the performance characteristics can be precisely determined. These calculations are presented in the top half of Table 2.

Since the diffuse status characteristic is comprised of culturally specific stereotypic traits, its *precise* strength cannot be determined at this time. However, it can be *estimated* in a crude sort of way. In order to determine its strength precisely, it would be necessary to identify *all* of the stereotypic elements associated with each state of the characteristic and specify whether each trait is positively or negatively evaluated within the

Table 1. SUMMARY DESCRIPTION OF EXPERIMENTAL CONDITIONS

	Information Given Subject About					
	Self			Partner		
Condition Number	Rank on Diffuse Status		Rank on Performance Set	Rank On Diffuse Status		Rank on Performance Set
1.	HS		--	LS		--
2.	LS		--	HS		--
3.	--		(3H1L)	--		(1H3L)
4.	--		(2H1L)	--		(1H2L)
5.	--		(1H2L)	--		(2H1L)
6.	--		(1H3L)	--		(3H1L)
7.	HS	x	(1H3L)	LS	x	(3H1L)
8.	HS	x	(1H2L)	LS	x	(2H1L)
9.	LS	x	(2H1L)	HS	x	(1H2L)
10.	LS	x	(3H1L)	HS	x	(1H3L)

culture. A complete listing seems unreasonable, however, the strength of the age characteristic theoretically must not be equal to 0. A characteristic with 0 strength does not differentiate actors and therefore would result in the same influence rates for each. But previous research (such as Freese and Cohen) reports significantly different $p(S)$s for actors in the different states of the age characteristic. Therefore, theoretically it must be treated as having a strength other than 0. But how much strength?

A salient, partial—not exhaustive—list of stereotypic traits seems to include a nearly equivalent number of positive and negative traits associated with each state of the characteristic (e.g., maturity–senility, inexperience–agility, wisdom–frailty, sense acuity–immaturity, etc.). Therefore, the degree of inconsistency among the elements would appear to be considerable. Thus, its strength should be rather low—at least less than the $+.50$ of the (3*H*1*L*) condition and greater than the $-.50$ of the (1*H*3*L*) condition. But, whether the strength of age is less than or greater than the $\pm.33$ of the three trait performance conditions is indeterminable *a priori*. Therefore, two sets of *ESV*s for the status-only baselines will be generated. Both are presented in the upper half of Table 2. As a result two different sets of *ESV*s are generated for the status inconsistency conditions. These are presented in the lower half of Table 2. The A set is based on the estimate of the age characteristic's strength as being approximately $\pm.40$. The B set is based on the estimate that its strength is approximately $\pm.25$.

Table 3 presents the comparisons of each status inconsistency conditions' *ESV* with its corresponding baseline condition's *ESV*s. Since $p(S)$s

Table 2. CALCULATION OF ESVs FOR BASELINE AND STATUS INCONSISTENCY CONDITIONS BASED ON STRENGTHS OF CHARACTERISTICS

Condition	S	$\frac{1}{2} + \frac{1}{2}[(S_{c1} + S_{c2}(1 - \lvert S_{c1}\rvert)]$	=	ESV
Baseline Performance-only				
(3H1L)	+.50	$\frac{1}{2} + \frac{1}{2}[(+.50) + (0)(1 - \lvert +.50\rvert)]$	=	.750
(1H3L)	−.50	$\frac{1}{2} + \frac{1}{2}[(-.50) + (0)(1 - \lvert -.50\rvert)]$	=	.250
(2H1L)	+.33	$\frac{1}{2} + \frac{1}{2}[(+.33) + (0)(1 - \lvert +.33\rvert)]$	=	.665
(1H2L)	−.33	$\frac{1}{2} + \frac{1}{2}[(-.33) + (0)(1 - \lvert -.33\rvert)]$	=	.335
Baseline Status-only				
(IF $S_{age} = \pm.40$)				
HS	+.40	$\frac{1}{2} + \frac{1}{2}[(+.40) + (0)(1 - \lvert +.40\rvert)]$	=	.700
LS	−.40	$\frac{1}{2} + \frac{1}{2}[(-.40) + (0)(1 - \lvert -.40\rvert)]$	=	.300
(IF $S_{age} = \pm.25$)				
HS	+.25	$\frac{1}{2} + \frac{1}{2}[(+.25) + (0)(1 - \lvert +.25\rvert)]$	=	.625
LS	−.25	$\frac{1}{2} + \frac{1}{2}[(-.25) + (0)(1 - \lvert -.25\rvert)]$	=	.385

Status Inconsistency Conditions

Condition	Q from Task* Performance		Q from Task* Status	S_{c1}	$\frac{1}{2} + \frac{1}{2}[(S_{c1} + S_{c2}(1 - \lvert S_{c1}\rvert)]$	=	ESV
SET A (ASSUMING $S_{age} = \pm.40$)							
LS(3H1L)	.50	<	.60	(3H1L)	$\frac{1}{2} + \frac{1}{2}[(+.50) + (-.40)(1 - \lvert +.50\rvert)]$	=	.650
HS(1H3L)	.50	<	.60	(1H3L)	$\frac{1}{2} + \frac{1}{2}[(-.50) + (+.40)(1 - \lvert -.50\rvert)]$	=	.350
LS(2H1L)	.67	>	.60	LS	$\frac{1}{2} + \frac{1}{2}[(-.40) + (+.33)(1 - \lvert -.40\rvert)]$	=	.399
HS(1H2L)	.67	>	.60	HS	$\frac{1}{2} + \frac{1}{2}[(+.40) + (-.33)(1 - \lvert +.40\rvert)]$	=	.601
SET B (ASSUMING $S_{age} = \pm.25$)							
LS(3H1L)	.50	<	.75	(3H1L)	$\frac{1}{2} + \frac{1}{2}[(+.50) + (-.25)(1 - \lvert +.50\rvert)]$	=	.693
HS(1H3L)	.50	<	.75	(1H3L)	$\frac{1}{2} + \frac{1}{2}[(-.50) + (+.25)(1 - \lvert -.50\rvert)]$	=	.308
LS(2H1L)	.33	<	.75	(2H1L)	$\frac{1}{2} + \frac{1}{2}[(+.33) + (-.25)(1 - \lvert +.33\rvert)]$	=	.624
HS(1H2L)	.33	<	.75	(1H2L)	$\frac{1}{2} + \frac{1}{2}[(-.33) + (+.25)(1 - \lvert -.33\rvert)]$	=	.376

*Since the task characteristic is assumed to have $S = \pm 1$, the characteristic for which $\lVert \pm 1\rvert - \lvert S_c \rVert$ is the least becomes the S_{c1} term in the ESV formula.

are assumed to be a monotonic function of *ESVs*, then the following predictions result between each status inconsistency condition and its corresponding baseline conditions.

Predictions From Set A ($S_{age} = \pm.40$)

1A. $p(S)_{(3H1L)} \approx p(S)_{LS(3H1L)} > p(S)_{LS}$
2A. $p(S)_{(1H3L)} \approx p(S)_{HS(1H3L)} < p(S)_{HS}$
3A. $p(S)_{(2H1L)} > p(S)_{LS(2H1L)} \approx p(S)_{LS}$
4A. $p(S)_{(1H2L)} < p(S)_{HS(1H2L)} \approx p(S)_{HS}$

Predictions From Set B ($S_{age} = \pm.25$)

1B. $p(S)_{(3H1L)} \approx p(S)_{LS(3H1L)} > p(S)_{LS}$

Table 3. COMPARISON OF ESVs FOR RELEVANT BASELINE AND STATUS INCONSISTENCY CONDITIONS

Comparison	ESVs Baseline Performance		ESVs Status Inconsistency		ESVs Baseline Status
SET A (ASSUMING S_{age} = ±.40)					
1.	(3H1L) .750	≃	LS(3H1L) .650	>	LS .300
2.	(1H3L) .250	≃	HS(1H3L) .350	<	HS .700
3.	(2H1L) .665	<	LS(2H1L) .399	≃	LS .300
4.	(1H2L) .335	>	HS(1H2L) .601	≃	HS .700
SET B (ASSUMING S_{age} = ±.25)					
1.	(3H1L) .750	≃	LS(3H1L) .693	>	LS .385
2.	(1H3L) .250	≃	HS(1H3L) .308	<	HS .625
3.	(2H1L) .665	≃	LS(2H1L) .624	>	LS .385
4.	(1H2L) .335	≃	HS(1H2L) .376	<	HS .625

2B. $p(S)_{(1H3L)} \approx p(S)_{HS(1H3L)} < p(S)_{HS}$
3B. $p(S)_{(2H1L)} \approx p(S)_{LS(2H1L)} > p(S)_{LS}$
4B. $p(S)_{(1H2L)} \approx p(S)_{HS(1H2L)} < p(S)_{HS}$

The 1A and 1B predictions are virtually the same. That is also true of the 2A and 2B predictions. In both cases, the influence rate for the performance-status condition is predicted to approximate but not equal the corresponding performance-only baseline condition while differing significantly from the corresponding status-only baseline condition. Prediction 3A differs from 3B only as to whether the performance-status condition will approximate the performance-only or the status-only baseline condition. Prediction 4A differs from the 4B prediction in this same way.

At this time, the choice between set A and set B cannot be made *a priori*. Although for orderings 3A and B and 4A and B the theory predicts that the performance-status condition will clearly approximate one of the baseline conditions and differ from the other, which one it will approximate is indeterminable until the estimate of the strength of age can be refined. A procedure for resolving this indeterminacy for purposes of analysis will be discussed below. In any event, all of these predictions differ from those which would be generated by other expectation states formulations.

The most prominent alternative formulation by Berger et al. (c) is based on graph-theory. It assumes that all characteristics combine to form aggregated expectation states. Furthermore, it assumes that characteristics whose graph paths are equal in length are equally weighted in the expectation formation process. For the experimental conditions created, that formulation would predict the following (the calculation of these predictions appears in Appendix A):

BFN_1. $p(S)_{(3H1L)} > p(S)_{LS(3H1L)} > p(S)_{LS}$
BFN_2. $p(S)_{(1H3L)} < p(S)_{HS(1H3L)} < p(S)_{HS}$
BFN_3. $p(S)_{(2H1L)} > p(S)_{LS(2H1L)} > p(S)_{LS}$
BFN_4. $p(S)_{(1H2L)} < p(S)_{HS(1H2L)} > p(S)_{HS}$

The two formulations predict the same ordering of magnitudes of $p(S)$ within each set of compared conditions. However, the Berger et al. (c) formulation would predict $p(S)$s for the performance-status conditions to fall about midway between those of the corresponding performance-only and status-only conditions.

Additionally, the Berger et al. (c) formulation would predict the same $p(S)$ for both three-trait performance-status conditions. That is, that model predicts: $p(S)_{HS(1H2L)} = p(S)_{LS(2H1L)}$. The new formulation presented here would clearly predict: $p(S)_{HS(1H2L)} \neq p(S)_{LS(2H1L)}$.

Results

Subjects were volunteer female undergraduates between the ages of 17 and 21 who were enrolled in introductory sociology classes. Each subject was randomly assigned to one of the ten experimental conditions. Analysis is based on the data collected from 251 subjects.[3]

Both theoretical formulations predict the ordered differences in influence rates between paired conditions. In the past, this has been analyzed using t tests of differences between proportions or Mann–Whitney U. The t tests will be used here. In past research, the within condition $p(S)$ variances have been relatively large. This would require considerable differences between conditions before statistical significance would be noted. However, the new formulation predicts that the performance-status conditions will be almost the same as the corresponding performance-only or status-only condition. Consequently, a more sensitive test is needed for the nonequivalence of conditions which are predicted to approximate but be different from each other.

Sell and Freese have developed a very sensitive test for nonequivalence within the context of a process theory of decision-making. In its most simplified form, this continuous-time, discrete-state model specified that the decision process involved in the collective task situation is continuous in time. As a result there is a continuous mathematical function which describes the decision process. The decision process is unique to the information base upon which the decisions are predicated. If the characteristics used as information differ between one condition and another, then the functions describing each will differ also. If the functions differ, then so too will their first derivatives. (For a description of the calculation of the first derivatives and the procedures for comparing sets of derivatives, see Appendix B.)

If balancing occurs in a performance-status condition then expectation formation is based on only one of the characteristics. Thus, the derivatives of the two-characteristic and corresponding one-characteristic condition will not differ. If combining occurs (as is predicted here), then a significant number of derivatives will differ even though the $p(S)$s for the conditions may appear to be approximately the same. Therefore, two conditions will be concluded to be *nonequivalent* if the probability of obtaining as many significantly different derivatives as there are in their comparison is less than .05. The binomial probability of obtaining 3 or more significantly different derivatives in such comparisons is .0429. Consequently, it will be concluded that combining occurred if there are 3 or more significantly different derivatives between a performance-status and its corresponding performance-only or status-only conditions (see Appendix B).

Baseline Conditions

The ordinal predictions of both theories must be evaluated *by the comparison of each two-characteristic condition with its corresponding performance-only and status-only conditions*. In order to show orderings and approximations which are substantively significant, it will be helpful *if the baseline conditions for each prediction* are significantly different from each other.

Table 4 summarizes the comparisons between each appropriate pair of conditions. One-tailed probabilities of t are reported since the directions of difference are predicted. Table 4 shows that for three of the comparisons, there are statistically significant differences between the $p(S)$ of the performance-only and corresponding status-only conditions. Only the $p(S)$ of the $(2H1L)$ condition does not significantly differ from that of its corresponding status-only condition, LS. Evaluation of predictions 3A or 3B and BFN_3 will be aided by the test of differences between derivatives in this case in particular.

Evaluating Predictions[4]

Since the strength of the age characteristic could not be precisely calculated, only a rough estimation of its strength could be offered. This produced two

Table 4. COMPARISONS OF $p(S)$s FOR BASELINE STATUS-ONLY AND PERFORMANCE-ONLY CONDITIONS

Condition	N	p(S)	$\underline{t}$ Value
(3H1L) LS	25 25	.671 .599	3.003*
LS (2H1L)	25 26	.599 .606	.289**
(1H2L) HS	25 25	.574 .676	4.284*
HS (1H3L)	25 25	.676 .573	4.243*

*$p < .005$, one-tailed, 48 degrees of freedom.
**49 degrees of freedom.

sets of possible predictions for the $HS(1H2L)$ and $LS(2H1L)$ conditions. The predicted orders of magnitudes were the same. But, the prediction as to which baseline condition the performance-status condition would be approximately the same was indeterminate. Since this does not affect the comparison between the utility of the new formulation and the Berger et al. formulation, it was decided to choose between 3A and 3B and 4A or 4B based on the apparent pattern of approximation in the data.

Table 5 presents the summary $p(S)$s for the ten experimental conditions. The $p(S)$ for the $HS(1H2L)$ condition (.667) more nearly approximates that of the HS condition (.676) than that of the $(1H2L)$ condition (.574). Less clearly, perhaps, the $p(S)$ of the $LS(2H1L)$ condition (.590) more nearly approximates that of the LS condition (.599) than that of the $(2H1L)$ condition (.606). In this case the differences are very small. Nevertheless, the pattern of approximation is consistent. The observed pattern of approximation suggests that the strength of the age characteristic falls *between* +.50 and +.33 for HS and −.33 and −.50 for LS (i.e., the estimate of S_{age} as being approximately ±.40 appears to be the more nearly accurate). Therefore, the A set of predictions is that appropriate for further analysis.

Table 6 presents the comparison of each pair of conditions necessary to evaluate the theoretical predictions. Given in the table are the $p(S)$ for each condition, the value of t for that difference, the number of significantly different derivatives between the two compared sets, and the binomial probability of that many or more significant differences.

Since both formulations predict the same orders of magnitudes, these will be examined first. Table 6 shows that there are only two deviations in the orders of magnitudes from those predicted. Both formulations

Table 5. SUMMARY DATA FOR THE 10 EXPERIMENTAL CONDITIONS

Condition	N	p(S)	$\bar{X}$*	SD
(3H1L)	25	.671	21.48	4.01
LS(3H1L)	25	.676	21.64	3.38
LS	25	.599	19.16	4.11
LS(2H1L)	25	.590	18.88	3.43
(2H1L)	26	.606	19.38	4.88
(1H2L)	25	.574	18.36	4.25
HS(1H2L)	25	.667	21.36	4.53
HS	25	.676	21.64	3.69
HS(1H3L)	25	.604	19.32	4.40
(1H3L)	25	.573	18.32	4.40

*Mean number of stay responses out of 32 critical trials.

predicted the $p(S)$ for the $LS(3H1L)$ condition to be less than that of the $(3H1L)$ condition and that the $p(S)$ of the $LS(2H1L)$ to be greater than that of the LS condition. The probability of obtaining two or fewer deviations from the predicted orderings in eight comparisons by chance alone is .144 (Hays). The difference from the predicted in each of these cases is less than .01 of a stay-response, which is sufficiently small to be attributable to random error. Based on this, coupled with the relatively low chance occurrence of six successful predictions, general support for both formulations is indicated for the ordering of influence rates.

Prediction 1A states that the $p(S)$ of the $LS(3H1L)$ condition will approximate that of the $(3H1L)$ but significantly differ from that of the LS condition. The Berger et al. formulation (BFN-theory) predicts it to fall midway between the other two (BFN_1); thus, $p(S)$ for $LS(3H1L)$ should significantly differ from that of both baseline conditions. If $p(S)$ for the $LS(3H1L)$ condition significantly differs from that of the LS condition but not from that of the $(3H1L)$ condition, then support will be claimed for the new formulation and disconfirming evidence for the BFN-theory.

Comparisons 1 and 2 of Table 6 indicate that the $p(S)$ for the $LS(3H1L)$ condition does significantly differ from that of the LS condition ($t = 3.217$; $p < .005$) but not from that of the $(3H1L)$ condition ($t = .214$). Thus, partial support for the new formulation is concluded.

Table 6. TESTS OF DIFFERENCES BETWEEN EXPERIMENTAL CONDITIONS BASED ON $p(S)$ AND DERIVATIVES

Condition		p(S)	t Value	# Significantly Different Derivatives	Binominal p of N or more Differences
1	(3H1L) LS(3H1L)	.671 .676	.214	3	.0429
2	LS(3H1L) LS	.676 .599	3.217*	4	.007
3	LS LS(2H1L)	.599 .590	.367	3	.0429
4	LS(2H1L) (2H1L)	.590 .606	.660	5	.0009
5	(1H2L) HS(1H2L)	.574 .667	3.855*	6	.0001
6	HS(1H2L) HS	.667 .676	.384	4	.007
7	HS HS(1H3L)	.676 .604	3.013*	6	.0001
8	HS(1H3L) (1H3L)	.604 .573	1.262	6	.0001
9	LS(2H1L) HS(1H2L)	.590 .667	3.200*	--	--

*$p < .005$, one-tailed, 48 degrees of freedom.

If the characteristics are combining then the function of the decision process in the *LS*(3*H*1*L*) condition will significantly differ from both of the other conditions. Table 6 shows there to be 3 significantly different derivatives between the *LS*(3*H*1*L*) and (3*H*1*L*) conditions ($p = .0429$) and 4 between the *LS*(3*H*1*L*) and *LS* conditions ($p = .007$). Therefore, the assumption that the characteristics are combined rather than balanced under this condition is supported.

Comparisons 7 and 8 in Table 6 concern predictions 2A and BFN_2. In this case the new formulation predicts the $p(S)$ of the *HS*(1*H*3*L*) condition to approximate that of the (1*H*3*L*) condition but to differ from that of the *HS* condition. Again, the Berger et al. (c) prediction is that $p(S)_{HS(1H3L)}$ will fall midway between the other two. As Table 6 shows, the $p(S)$ for *HS*(1*H*3*L*) significantly differs from that of *HS* ($t = 3.013$ and $p < .005$); but not from that of (1*H*3*L*)—($t = 1.262$). While inconsistent with the *BFN*-theory, these findings appear to support the new formulation. Table 6 also indicates that there are 6 significantly different derivatives between the

HS(1*H*3*L*) condition and each of the (1*H*3*L*) and *HS* conditions ($p = .0001$). Again, the findings appear to support the combining assumption.

Earlier, it had been decided to analyze prediction 4A of the new formulation along with BFN_4 of the *BFN*-theory. Comparisons 5 and 6 of Table 6 are appropriate for this analysis. Again, the *BFN*-theory predicts the $p(S)$ of the *HS*(1*H*2*L*) condition to fall midway between those of the baseline conditions while the new formulation predicts its approximation to the *HS* condition. Table 6 indicates that the $p(S)$ for the *HS*(1*H*2*L*) condition significantly differs from that of the (1*H*2*L*) condition ($t = 3.855$; $p < .005$), but not from that of the *HS* condition ($t = .384$). Again, the findings appear to support the new formulation and to disconfirm the prediction of the *BFN*-theory. Furthermore, Table 6 indicates there are 6 significantly different derivatives between the *HS*(1*H*2*L*) and (1*H*2*L*) conditions ($p = .0001$) and four between the *HS*(1*H*2*L*) and *HS* conditions ($p = .007$). Again the findings appear to support the combining assumption.

Comparisons 3 and 4 are relevant to predictions 3A and BFN_3. The comparisons indicate that the $p(S)$ of the *LS*(2*H*1*L*) condition does not significantly differ from either that of (2*H*1*L*)—($t = .66$)—or that of *LS* ($t = .367$). However, as noted earlier, the baseline conditions did not significantly differ from each other either. As a result, inferring support for either formulation based on this comparison would be somewhat questionable even though the predicted approximation appears to have occurred. Table 6 also shows that the characteristics apparently were combined. There are 5 significantly different derivatives between the *LS*(2*H*1*L*) and (2*H*1*L*) conditions ($p = .0009$) and 3 between the *LS*(2*H*1*L*) and *LS* conditions ($p = .0429$).

Lastly, the two formulations yielded clearly different predictions concerning the differentiation that would result in the *HS*(1*H*2*L*) and *LS*(2*H*1*L*) conditions. Whereas the Berger et al. (c) formulation predicts the equivalence of the two conditions, the new formulation predicts the *HS*(1*H*2*L*) $p(S)$ to be greater and not equal to that of the *LS*(2*H*1*L*) condition.[5] Comparison 9 of Table 6 evaluates the relative accuracy of the two formulations for these conditions. The comparison shows that the $p(S)$ of the *HS*(1*H*2*L*) condition differs significantly from that of the *LS*(2*H*1*L*) condition ($t = 3.200$; $p < .005$). The direction of difference is also as predicted by the new formulation. Thus, it would appear that the evidence from this analysis provides additional support for the new formulation and additional disconfirming evidence for the Berger et al. formulation.

Conclusions and Discussion

The findings and analyses presented above appear to provide very consistent, strong support for the alternative formulation of expectation states theory offered here. By assuming rationality on the part of actors, the new formulation asserts that actors combine (or balance under some conditions) characteristics as a function of their pertinence to the collective task. In situations of status inconsistency, actors resolve the problems of interaction by more heavily weighting the characteristic most appropriate to the task. The relative dissimilarity of characteristics is a mathematical function of the inconsistency of evaluations among traits comprising each characteristic.

While the evidence appears to support the new formulation, it provides some disconfirming evidence for the Berger et al. (c) graph-theoretic formulation. Specifically, the form of combining in the *BFN*-theory appears to predict less accurately the behavior of the actors. Also, in a comparison constituting something of a crucial test between the two theories, the prediction of the *BFN*-theory appears to be disconfirmed while that of the new formulation is supported.

However, the test of the new formulation remains something less than ideal. Not being able to calculate *precisely* the strength of the diffuse status characteristic *a priori* is a weakness, although the procedures used in the analysis seem not to have contaminated the test very greatly. A more refined test might be attempted if a diffuse status characteristic with innumerable, evaluated traits could be created in the laboratory—perhaps, through the use of subliminal audio and visual cuts. Additional extension of the theory might involve expanding the formula for expectation state values so as to include k characteristics rather than just two. Furthermore, the apparently contradictory findings of Freese and Cohen and Webster and Driskell might be resolved by a weighting procedure to account for the intensity of cultural norms demanding that certain characteristics be invoked in expectation formation, in addition to the weighting by dissimilarity.

Explicating the resolution of status inconsistency in this way may help point to those conditions which must exist if minority group membership is not to be held against the individual. At least then we may find instances when minority group status will *not* organize interaction.

Notes

1. The ideas being presented here have been developed within the context of a formal theory. Terms which have been developed formally have been italicized in the text. A complete copy of the formal theory, sans discussion, can be obtained from the author upon request.
2. The idea of weighting one status of an individual more than another is not original. Sociologists often assume, for instance, that one's occupational status takes on greater relevance in defining one's self than does one's religious affiliation. Empirically, the weighting of one status over another was noted in Segal et al. By formulating expectation formation as a weighted sum, this attempt anticipates the reacquainting of expectation states research with such widely accepted concepts as "a master status" which have otherwise been ignored in expectation states formulations.
3. A total of 358 subjects participated, but 107 (29.9 percent) were excluded from analysis because of suspicion (29) or violation of conditions (78). Decisions to exclude subjects were based on subjects' responses to a post-experimental questionnaire and interview.

4. To correct the experiment-wise error rate for the 9 t tests involved in evaluating predictions, Dunn's technique for simultaneous inference is used to set the overall error rate as .05, thus depressing the Alpha level for each t comparison to .05/9, or .0055. Values are reported as significant at the .005 level.
5. Since it was decided to use the A set of predictions, the $HS(1H2L)$ condition is supposed to approximate the HS condition while the $LS(2H1L)$ condition should approximate the LS condition. Since $p(S)_{HS}$ is significantly greater than $p(S)_{LS}$, then $p(S)_{HS(1H2L)}$ should be greater than $p(S)_{LS(2H1L)}$. This is a more specific prediction than the original prediction that $p(S)_{HS(1H2L)} \neq p(S)_{LS(2H1L)}$, but it could not be made until the choice between sets A and B was made.

Appendix A

The Berger et al. (c) formulation of expectation states theory utilizes a graph-theory calculus. It assumes that all characteristics combine to form aggregated expectation states. Characteristics combine based on the weighted lengths of signed paths linking the characteristic to task success. Characteristics whose paths are equal in length are equally weighted in the expectation formation process. Predictions are said to be based on the formula $P(S) = m + q(e_p - e_o)$, where m is the population mean, q is the treatment effect (with no clear theoretical import) and $(e_p - e_o)$ is the expectation advantage, or the difference between the aggregate expectation states for self and other. Besides the problem of the theoretical vagueness of q, only expectation advantage can be specified *a priori*. Consequently, predictions derived from this formulation for comparison to those of the reformulation being offered here are based on the expectation advantage. For each experimental condition, the following paths are formed:

Path Lengths for Self and Other by Sign and Condition

Condition	*Paths for Self*	*Paths for Other*
HS	+: 4, 5	+: none
	−: none	−: 4, 5
LS	+: none	+: 4, 5
	−: 4, 5	−: none
(3*H*1*L*)	+: 4, 4, 4, 5, 5, 5	+: 4, 5
	−: 4, 5	−: 4, 4, 4, 5, 5, 5
(1*H*3*L*)	+: 4, 5	+: 4, 4, 4, 5, 5, 5
	−: 4, 4, 4, 5, 5, 5	−: 4, 5
(2*H*1*L*)	+: 4, 4, 5, 5	+: 4, 5
	−: 4, 5	−: 4, 4, 5, 5
(1*H*2*L*)	+: 4, 5	+: 4, 4, 5, 5
	−: 4, 4, 5, 5	−: 4, 5
HS(1*H*3*L*)	+: 4, 4, 5, 5	+: 4, 4, 4, 5, 5, 5
	−: 4, 4, 4, 5, 5, 5	−: 4, 4, 5, 5
LS(3*H*1*L*)	+: 4, 4, 4, 5, 5, 5	+: 4, 4, 5, 5
	−: 4, 4, 5, 5	−: 4, 4, 4, 5, 5, 5
LS(2*H*1*L*)	+: 4, 4, 5, 5	+: 4, 4, 5, 5
	−: 4, 4, 5, 5	−: 4, 4, 5, 5
HS(1*H*2*L*)	+: 4, 4, 5, 5	+: 4, 4, 5, 5
	−: 4, 4, 5, 5	−: 4, 4, 5, 5

Following the Berger et al. (c) procedures, if $k = 3$, then $f(3) = .4422$, $f(4) = .1768$, and $f(5) = .06279$. Combining paths accordingly results in the following expectation advantage for self in each experimental condition:

Condition of Self	$(e_p - e_o)$
$(3H1L)$	.59173
HS	.45698
$(2H1L)$	.41257
$LS(3H1L)$	.17916
$LS(2H1L)$	.00000
$HS(1H2L)$	.00000
$HS(1H3L)$	−.17916
$(1H2L)$	−.41257
LS	−.45698
$(1H3L)$	−.59173

Since $p(S)$ increases with the magnitude of expectation advantage, ordinal predictions result. These predictions are delineated on page 16 in the text of the paper.

Appendix B

The Sell–Freese model assumes that the decision process in the task situation is continuous with respect to time and therefore can be described by a mathematical function. The decision process is determined by observing the behavior of change and stay responses from trial to trial for all subjects in a given condition. In this model, the four possible states of behavior are:

q_{00}: a stay-response on trial n followed by another on trial $n + 1$;
q_{01}: a stay-response on trial n followed by a change-response on trial $n + 1$;
q_{10}: a change-response on trial n followed by a stay-response on trial $n + 1$;
q_{11}: a change-response on trial n followed by another on trial $n + 1$; where q is the proportion of all subjects in a given treatment. Measurement of the first derivative with respect to time for the overall rate of change from one state to another is given by: $q_{01} - q_{10}$.

A test of the nonequivalence of the functions can then be accomplished by considering the differences between the derivatives of the treatment conditions being compared. Since there are 32 critical trials in the experiment, there are 31 independent derivatives. A t test of the difference between each pair can then be performed. Since the hypothesis for comparing each pair of derivatives comes from the same prediction, then Dunn's technique of simultaneous inference may be used to evaluate the overall equivalence or nonequivalence of the two compared treatment conditions. To achieve an overall alpha level of .05 for the compared treatments, then a probability of .0016 with $(N_1 + N_2 - 2)$ degrees of freedom for each pair of compared derivatives must be attained. Thus, two derivatives will be considered different if the probability of t for their difference is less than .0016.

The functions (and their respective conditions) will be considered as being significantly different from each other if the binomial probability of obtaining N or more significant differences between derivatives is less than .05. Since the binomial test requires the independence of trials and since the derivatives are based on observations at trials n and $n + 1$, then the binomial N is reduced from 32 to 16. As a result, two functions and their treatment conditions will be concluded to be not equivalent if three or more significantly different derivatives appear in their comparisons. The binomial probability of three or more significant differences between paired derivatives in such comparisons is .0429.

For example, the evaluation of derivatives in the comparison between the $LS(2H1L)$ and $(2H1L)$ conditions produced the following table:

Table 7. COMPARISON OF DERIVATIVES FOR THE *LS*(2*H*1*L*) AND (2*H*1*L*) EXPERIMENTAL CONDITIONS

	Derivatives			
Trial N and N+1	(2H1L)LS	(2H1L)	*t* Value	Pr(*t*)
1-2	-.21	.21	3.6813	.0006*
2-3	.43	.10	2.6800	.0099
3-4	.21	-.14	3.2936	.0018
4-5	.01	.10	1.3988	.1682
5-6	.19	.37	1.4285	.1595
6-7	.30	.08	2.0108	.0499
7-8	.40	.68	2.0066	.0503
8-9	.40	.41	.0727	.9423
9-10	.51	.00	4.2048	.0001*
10-11	.27	.23	.3300	.7428
11-12	.47	.22	1.8807	.0659
12-13	-.25	.10	3.2994	.0018
13-14	.37	.23	1.0921	.2801
14-15	.15	.20	.4693	.6409
15-16	-.13	.33	3.8907	.0003*
16-17	-.03	.20	2.5578	.0137
17-18	.21	.46	1.8875	.0650
18-19	.03	.24	2.1800	.0341
19-20	.12	.21	.8638	.3919
20-21	-.20	.16	3.3481	.0016*
21-22	-.03	-.10	1.0088	.3180
22-23	.11	.32	1.8186	.0751
23-24	-.21	.08	2.9512	.0048
24-25	.20	.55	1.1053	.2744
25-26	.27	-.17	3.7981	.0004*
26-27	.70	.55	1.1053	.2744
27-28	.17	.37	1.6046	.1150
28-29	.22	-.03	2.7161	.0091
29-30	.10	.23	1.2465	.2185
30-31	.37	.41	.2927	.7709
31-32	.40	.40	.0000	1.0000

NOTE: Pr(Five or More Significant Differences) = .0009.

*Two-tailed probability; significant at .0016 level, 49 degrees of freedom.

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