Social Psychology Quarterly
2009, Vol. 72, No. 2, 180–197

Affective Dynamics of Leadership: An Experimental Test of Affect Control Theory*

TOBIAS SCHRÖDER

WOLFGANG SCHOLL
Humboldt-Universität zu Berlin

Affect Control Theory (ACT; Heise 1979, 2007) states that people control social interactions by striving to maintain culturally shared feelings about the situation. The theory is based on mathematical models of language-based impression formation. In a laboratory experiment, we tested the predictive power of a new German-language ACT model with respect to actual behavior and felt emotions in leadership; 60 subjects managed a computer simulated company by communicating with 3 different virtual employees (within-subjects manipulation). Half of the subjects were primed with the concept of authoritarian leadership using a situational interview technique; the remainder was primed with the concept of democratic leadership (between-subjects manipulation). There were 14 dependent variables (leadership categories like praise, criticize, augment salary, etc.). The German impression-formation model correctly predicted 27 of 42 between-subjects contrasts ($p < .05$) and 56 of 84 within-subjects contrasts ($p < .01$). Moreover, Euclidean distances of emotions predicted by the German ACT model correlated negatively with the frequency with which the subjects experienced these emotions (correlations ranged from $r = –.18$ to $r = –.61$). These results support Affect Control Theory's proposition that realistic social interaction can be predicted by mathematical models of affective consistency.

Affect Control Theory (ACT) states that while interacting socially, people try to create impressions that match culturally shared fundamental feelings associated with their mental representation of the situation (Heise 1979, 2007; MacKinnon 1994). The theory is built upon language-based mathematical models of impression formation, emotion, and attribution. Over decades, overwhelming empirical evidence has been gathered, corroborating the power of the affect control principle to account for social phenomena as different as emotions, deviance, social movements, and international relations, to name only a few examples. The research described in the present paper has a twofold goal: the first one is to apply Affect Control Theory to the area of leadership, which has rarely been done before. The second, and probably more ambitious goal, is to subject the theory to a rigorous test in a behavioral experiment. While the theory aims at explaining social behavior, the vast majority of ACT-related research has employed methods that require the subjects to process language rather than to interact socially. The international ACT website (Heise 1997a) currently lists about 170 research reports, only 2 of which describe behavioral experiments. While these two experiments (Wiggins and Heise 1987; Robinson and Smith-Lovin 1992) each focus on a particular aspect of Affect Control Theory, the experiment described here was designed to test whether the whole dynamics of impression formation, emotion, and behavior in realistic episodes of social interaction is indeed equivalent to the one in the processing of language that is so well described and sustained by previous research related to Affect Control Theory.

The authors wish to thank Heike Ollesch and Edgar Heineken for providing their Motivator One software for this experiment. They also gave invaluable technical support. Thanks also to Jan Hülsenbeck and Marko Peucker for their help with the data collection. This work would not have been possible without a doctoral research grant awarded to the first author by the Friedrich Ebert Foundation. Direct correspondence to Tobias Schröder, Arbeitsbereich Erziehungswissenschaftliche Zukunftsforschung, Freie Universität Berlin, 14195 Berlin, Germany; mail@tschroeder.eu.

THEORETICAL BACKGROUND

Affect Control Theory

Social action as the confirmation of sentiments. In Affect Control Theory, a *fundamental sentiment* is a culturally shared feeling evoked by the mental representation of a concept such as a social identity, a behavior, a personality trait, or an emotion. The Semantic Differential allows one to assign a metric to such feelings, i.e., to treat a concept as a vector in a three dimensional *affective space,* hypothesized to be a universal organizing principle of the human mind (Osgood, Suci, and Tannenbaum 1957). Decades of research (e.g., Osgood, May, and Miron 1975) have shown that three factors appear again and again when subjects rate the similarity of concepts on bipolar graphic rating scales with opposite adjectives at each end. The first factor, *evaluation,* usually refers to feelings of goodness or badness elicited by a concept, whereas the second, *potency,* is associated to feelings of being strong and big as opposed to weak or little. The third factor, called *activity,* is related to whether the feeling induced by thinking about a concept is calm or rather lively. Those three factors serve as basis vectors for the affective space. The Semantic Differential has been used by psychologists and sociologists to compile *affective dictionaries* in various languages, i.e., databases of the most frequently used words in a language along with the average ratings of these words by a sample of native speakers (Heise 2001). The present paper is based on a new affective dictionary in German language. Our 1,905 subjects used the Semantic Differential to rate 1,100 concepts relevant to social interaction in an internet based study (Schröder 2008, forthcoming). On average, each word was rated by 25.6 males and 37.8 females (see Heise 2001 on the general methodology). As an example, the German fundamental sentiment toward a mother (*Mutter)* seems to be very good, somewhat strong and neither calm nor lively, yielding an Evaluation-Potency-Activity (EPA) profile of [2.8, 1.4, 0.4][1] on scales ranging from –4.3 through 0 to 4.3 (Schröder 2008).

The feeling associated with a concept can be deflected from its fundamental sentiment if the concept appears within the verbal description of a social event. While imagining a mother who plays with a child (*Eine Mutter spielt mit einem Kind.)* would probably result in a feeling toward the mother that is very similar to her fundamental sentiment, the case is different for a mother beating a child (*Eine Mutter schlägt ein Kind.)*. Germans (and probably not only Germans) would now perceive her as quite bad rather than very good, maybe as stronger than before, and definitely as a lot more lively. In Affect Control Theory's terminology, the transient impression of that mother would have changed considerably through the action of beating a child.

Why do we expect mothers to praise children rather than beating them? Affect Control Theory's suggestion is, based on symbolic-interactionist principles, that the action of praising allows the mother to create an impression of herself that matches her fundamental sentiment, i.e., her culturally founded role identity as a mother. On the contrary, the action of beating a child would disconfirm her self-sentiment. The desire for confirming one's sentiments is seen as the basic motivational principle in Affect Control Theory. In social interaction, "humans try to experience what they already know" (Heise 2007:35).

Mathematical model of the affect control principle. The change of impressions as events unfold is described by regression equations that predict impressions following a simple subject-verb-object grammar. These equations have the following simplified form:

$$A' = c + b_1 A + b_2 B + b_3 O + \textit{interaction terms}$$

where A' is the predicted impression of the actor, while A, B, and O are the fundamental sentiments toward the actor, behavior, and object, respectively. The regression weights are derived from a set of complete sentences rated in empirical studies. Additional interaction terms can account for psychological subtleties in the impression formation process. As

[1] Following a research tradition in Affect Control Theory, the German affective dictionary contains separate Evaluation-Potency-Acitivity profiles for male and female raters. In the present paper, however, unisex EPA profiles are used that were obtained by averaging male and female EPA ratings.

an example, acting negatively toward a bad person (like punishing a criminal) may yield a more favorable impression of the actor than acting negatively toward a good person (like punishing a child), which is accounted for by the B_eO_e interaction term usually found in impression formation studies. A complete model of impression formation consists of nine different equations—a separate one to estimate the evaluation, potency, and activity outcomes for the actor, behavior, and object. Previously, *ABO* impression formation equations have been published for English (Smith-Lovin 1987) and Japanese (Smith, Matsuno, and Umino 1994). The research reported here has been done with new German equation estimations yet unpublished (Schröder forthcoming).

Derivations of the impression formation equations can be used to mathematically operationalize Affect Control Theory's proposed motivational principle. The squared Euclidean distance between fundamental sentiments and transient impressions serves as a metric for the concept of affective deflection. According to the German ACT model, the deflection created by a mother playing with a child is $D = 8.2$, whereas it is five times higher ($D = 40.9$) for a mother beating a child. The lower the deflection, the higher is the predicted probability of the associated event to occur; hence, ACT's mathematical prediction is what common sense would suggest: German mothers prefer praising their children to beating them. It follows that by learning the emotional meaning of words in the socialization process, people will be able to derive instant knowledge about the probability of upcoming events. The mathematical calculations of ACT's predictions are done by the computer program *Interact* (Heise 1997b; Schneider and Heise 1995), which implements the simulation of social interaction. The new German model has recently been incorporated into the *Interact* software available for download at the international ACT website (Heise 1997a).

Emotions. While affect is considered "a general mode of consciousness" (MacKinnon 1994:123), *emotions* are singular experiential episodes at discrete points in time, often following a social event. Emotion concepts such as anger or happiness can be used to assign meaning to those experiences. Affect Control Theory also provides a mathematical model to predict the meaning that people will ascribe to their emotional experience during a specific episode of social interaction. Again, the model is based on empirically derived regression equations that model the amalgamation of affect when two concepts are combined (Averett and Heise 1987). For example, the feeling elicited by the imagination of a satisfied mother is predicted by taking a linear combination of the fundamental EPA profiles of the concepts satisfied and mother.

Interact uses these amalgamation equations to create the theory's prediction of emotional meaning by comparing amalgamated EPA profiles to EPA profiles representing transient impressions after a social event. For example, applying the recently developed German equations (Schröder forthcoming) to a satisfied mother (*zufriedene Mutter)* yields an EPA profile of [3.6, 1.9, –0.9]. This is similar to the transient impression of a mother playing with a child [3.1, 1.7, 0.8]. A mother playing with a child feels like a satisfied mother. What does a mother beating a child feel like? The transient EPA profile is [–0.9, 3.1, 2.0]. *Interact* uses derivations from the amalgamation equations to calculate the EPA profile of an emotion word that would fit into that transient impression if combined with the concept of mother. In the German affective dictionary, the emotion term furious (*wütend)* is the one that best matches the mathematical prediction. Actually, *Interact* calculates an EPA profile of [–1.8, 1.9, 2.4] for a furious mother (*wütende Mutter)*. Hence, Affect Control Theory predicts—along with common sense—that a German mother playing with a child would feel satisfied, whereas she would feel furious while beating the child. It is the specific achievement of ACT to make point predictions about likely behaviors and feelings for any upcoming event which can be described in ordinary language.

Previous empirical tests of Affect Control Theory. The predominant methods in submitting ACT to empirical tests have included

computer simulation of role behavior (MacKinnon 1994), qualitative sociological analyses of cultures (e.g., Smith et al. 1994) and subcultures (Smith-Lovin and Douglass 1992), and some experiments that involved vignettes or other language-based material. For example, Heise and MacKinnon (1987) predicted the perceived likelihood of events using the deflection inherent in the event descriptions. Heise and Calhan (1995) asked students to imagine themselves in 128 situations and then to report what emotions they would feel. Robinson, Smith-Lovin, and Tsoudis (1994) showed that the penalties imposed by their subjects on imaginary criminal defendants varied in line with *Interact* predictions, depending on the specific emotions the defendants were described to show in the court case descriptions used in the experiment. While these and other studies contributed important evidence supporting ACT, this evidence remains somewhat limited in that it is devoted to analyzing the processing of language, which is only one aspect of ACT. Cognitive psychologists (e.g., Johnson-Laird 1983) have argued that the human mind controls its activities by manipulating analogous mental models rather than the abstract symbols of language. Therefore, it is by no means evident that the same processes of impression formation as they occur in reading vignettes guide actual social behavior and immediate emotional experience. While Affect Control Theory would certainly be impressive enough as a theory of the affective structure of language, its most interesting suggestion is the functional equivalence of the processing of language with the affective regulation of social behavior. Observing real behavior is of the essence for submitting this bold hypothesis to a test.

In an effort to do so, Wiggins and Heise (1987) created an experimental situation where naive subjects interacted with a young man (actually a confederate) who was labeled as either a fellow student or as a participant recruited from a juvenile delinquent program. In one experimental condition, the subjects' sense of self-worth was diminished by a supposed secretary criticizing and treating them rudely. In the control condition, the secretary was nice to the subjects. Affect Control Theory suggests a principle of evaluative balance in social interaction: To create positive impressions of themselves, actors are expected to treat positive objects kindly and negative objects poorly. This has been discussed above as the B_eO_e term in the impression formation equations. In the context of Wiggins and Heise's experiment, this term predicts that the students embarrassed by the secretary would treat a fellow student especially kindly, and the supposed delinquent especially poorly in order to restore their damaged self-esteem. That was precisely what happened during the experiment according to observers blind to the experimental conditions. The results of the experiment by Wiggins and Heise (1987) can be interpreted as behavioral evidence for the B_eO_e effect to occur in social interaction.

Robinson et al. (1992) looked at emotional responses to deflecting events by employing a typical experiment-design from self-verification theory (Swann and Read 1981). Participants were asked to read a short passage from a well-known piece of literature, believing that their performance would be evaluated by two different raters. One rater gave positive feedback, while the other rater criticized the performance. Affect Control Theory correctly predicted that while all the subjects receiving positive feedback would feel positive emotions, those participants originally low on self-esteem would choose to interact later with the rater who had provided negative feedback. The experiment delivered behavioral evidence for one of the core assumptions of ACT: people create interactions in order to confirm what they already know about themselves.

Goals of the present study. The present article deals with an experiment aimed at providing additional behavioral evidence for the affect control principle governing social interaction. We intended to create a complex setting for social interaction that would allow us to examine the dynamics of impressions, behavior, and emotions as a whole, rather than focusing on single (albeit central) aspects of the theory as in the previous behavioral experiments

reported above. The most important goal of our study was to link behavioral observations and reported emotions to the mathematical model of Affect Control Theory as it is stated in the following hypotheses:

> *Social Action Hypothesis:* During the experiment, subjects are more likely to choose behaviors that cause less affective deflection according to the German ACT model.
>
> *Emotion Hypothesis:* Subjects are more likely to label their emotional experiences with emotion concepts having low Euclidean distances to those predicted by the German ACT model.

While these are very general hypotheses, more operational precise predictions about behavior and emotions will be derived from the mathematical model using the computer simulations that are displayed in the results section.

The second goal of our experiment was to apply Affect Control Theory to leadership behavior.

Leadership

Traditional definitions of leadership have emphasized an intentional, goal-oriented character of leadership behavior, as the following example shows: "Leadership may be considered as the act of influencing the activities of an organized group in its efforts toward goal setting and goal achievement" (Stogdill 1950). By contrast, Affect Control Theory suggests that the driving force behind a leader's actions is to affirm the culturally shared affective meaning of the situation. For example, the German EPA profile for an executive (*Führungskraft)*[2] is [0.3 2.3 1.8]. Among the behaviors with EPA profiles most similar to that in the German dictionary are call to perform well (*Leistung fordern)* and—amusingly—get drunk with (*besaufen)*.[3] ACT quite plausibly predicts that German leaders not only press their followers to perform well on their job, but also cultivate an attitude of conviviality by occasionally going out for a drink with them. However, neither of these actions stems from any intentional goal-oriented efforts.

Schneider (2002) pioneered the application of Affect Control Theory's computer simulations to classical theories of leadership. The American ACT model he used for the simulations predicted that a manager would caution, uplift, or congratulate an advisor with whom he was interacting. The positive nature of these suggested behaviors can be interpreted, according to Schneider, in terms of a charismatic view of leadership. The simulations also predicted a mutual rise in status as a result of the interaction between the leader and the advisor. This can be linked to transactional theories of leadership like the leader-member exchange approach (Danserau, Graen, and Haga 1975), which focuses on the exchange of satisfactions, monetary or psychological, in the leadership process. Schneider does not, however, report evidence from sources other than the computer simulation, which would further corroborate his proposed affect control view on leadership. This is clearly an area where future research is required.

Leadership styles. One of the best established dichotomies in the area of leadership consists in the distinction between authoritarian and democratic leadership styles; the distinction can be traced to a classical study by Lewin, Lippitt, and White (1939) but has been reasserted by many other researchers, although sometimes labeled differently. Authoritarian leaders provide clear expectations for what needs to be done and how it should be done; there is a power gap between the authoritarian leader and the followers. In contrast, democratic leaders offer guidance to group members but also participate in the group and encourage other group members to make proposals; hence, they are sometimes called participative leaders. A very similar, well known dichotomy of leadership behaviors has been established by the Ohio State leadership studies, employing orthogonal dimensions of initiating structure and consid-

[2] For obvious historical reasons, *Führer,* the correct German translation of leader cannot be applied to organizational leadership research in Germany.

[3] Since the German language has many more words than those in the rated dictionary, there might be some other verbs still residing in the regional emotional space of *Führungskraft* (executive).

eration (Halpin and Winer 1957; Fleishman and Harris 1962). High initiating structure combined with low consideration is very similar to Lewin's authoritarian leadership, where the leader clearly defines what subordinates are supposed to do and how. High consideration combined with medium to high initiating structure corresponds to the more democratic leaders, who care about their subordinates as people, promote good socioemotional relationships among them, and stimulate them to have their own ideas and activities.

One possible way for dealing with these different leadership styles in an Affect Control Theory framework would be to assume that different leaders use different social identities for defining themselves in their role as a leader. For example, the German affective dictionary (Schröder 2008) contains the identity of team leader (*Teamleiter)* with an EPA profile of [0.9, 2.0, 1.8]. Leaders enacting that identity could use behaviors such as debate (*debattieren* [1.0, 1.9, 2.6]) or discuss (*diskutieren* [1.8, 1.8, 1.8]), that can be clearly linked to the concept of democratic leadership, to confirm their self sentiment. An authoritarian leader, however, may see himself as superior (*Vorgesetzter* [–0.3, 1.9, 0.4]) having to fall back upon identity confirming authoritative behaviors like admonish *(ermahnen* [–1.4, 1.3, 0.2]) or order (*Anweisungen geben* [–0.2, 1.8, 1.3]).

The purpose of this experiment was to examine whether the general principles of Affect Control Theory could indeed be used to predict the subjects' behavior in a typical leadership task. No additional hypothesis was formulated, as the confirmation of the more general social action and emotion hypotheses would automatically generate evidence for the proposed affect control theory of leadership.

METHOD

The Task: Magic Monster Inc. Business Simulation

The software Motivator One (Heineken, Lohaus, and Ollesch 1996) was used to create the virtual company Magic Monster Inc. devoted to producing little toy monsters. The company has three departments (purchasing, production, and sales), each headed by a virtual agent. The subjects' task consisted in running the company for a simulated year (real time: approximately 50 minutes) as the CEO. To do so, they communicated with the virtual heads of department by choosing phrases out of those available in the communications menu. There were 105 different phrases available that were organized into 13 categories of leadership behavior. For a screenshot, see Figure 1. In the upper part of the screen, the three heads of department can be seen. By clicking on their picture, the participants could start communicating with them. In each category of leadership behavior (in the example of Figure 1: *praise employees)*, a choice of seven phrases was available.

The three virtual employees usually answered the communication. Their answers appeared on the screen in pop-up windows containing a specific utterance. Occasionally, the virtual agents would start communicating with the subjects on their own, controlled by a random generator in the software. In the lower part of the screen, information about the economic state of the company could be analyzed.

Magic Monster Inc. was developed for training business leaders and for conducting experiments in organizational psychology (e.g., Heineken, Ollesch, and Stenzel 2003). From a series of previous studies, there is evidence for its subjective validity among practitioners (Ollesch 2001). At the core of the software is a mathematical model of motivation. By clicking on an adequate phrase, the subjects change the current motivational state of their virtual employees, which is in turn linked to the economic model implemented in the software. As an example, praising the leader of the sales department would increase his achievement motivation. Consequently, his performance would go up, increasing the number of toy monsters sold and the company's turnover. However, running the company is not as easy as the example might suggest. The model combines 10 motivational variables with 20 economic variables, resulting in a complex and highly dynamic system. The important point for testing Affect Control Theory in leadership is that communicating

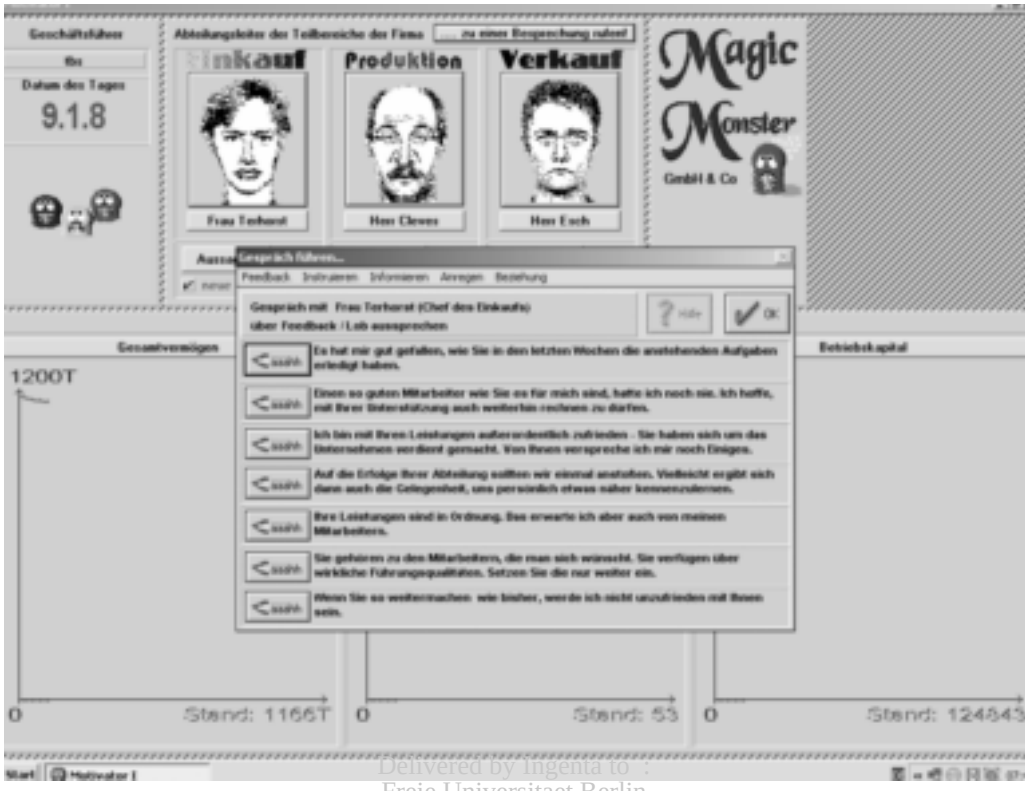

Figure 1. Screenshot of Magic Monster Inc. (Printed with permission from Edgar Heineken, Universität Duisburg-Essen, Germany).

with the virtual employees is the only way for the subjects to influence the state of the company in order to maximize its economic value.

Sample

Subjects were 64 university students from Berlin, Germany. They were recruited via a city-wide database of students interested in taking part in psychological experiments. Data from one subject had to be excluded due to technical problems with the employed software. Data from three additional subjects were excluded because they showed no variation at all in the behaviors chosen, but rather clicked on the same phrase again and again, regardless of what happened during the course of the simulation. Consequently, the analyses reported here relate to the remaining 60 subjects, 30 of whom were males, and 30 females, at an average age of 26.8 years (SD = 7.3 years). The experiment had been advertised as an assessment-center training. As a reward for their participation, the subjects were offered professional feedback from a trained psychologist on their leadership behavior and problem-solving performance during the business simulation.

Experimental Design

The experimental design was 2 between × 3 within factorial. The between-subjects manipulation aimed at inducing authoritarian versus democratic leadership styles in the subjects using a situational interview priming technique. The within-subjects manipulation was about assigning different personalities to the three virtual employees. The combination of these manipulations yielded six different actor-object configurations in which social interactions could occur during the experiment.

Independent Variables

Manipulation of leadership style. Before the subjects started to run the virtual company, a structured situational interview was conducted "to assess their previous experience with leadership situations." Half of the subjects (N = 30) were asked to remember and describe a situation "where they prevailed over the resistance of the other group members" (authoritarian leadership condition). In German, the wording closely matched Max Weber's famous definition of power (Weber [1922]1990). The remaining 30 subjects were asked to report a situation out of their memory "where they succeeded in convincing the other group members of their ideas" (democratic leadership condition). This priming was intended to bias the subjects so that during the experiment they would stick to their situational self-definitions elicited from the prior interview.

The situations assessed with the interviews were simulated with the German Affect Control Theory model implemented by *Interact* as follows. A student prevailing over a student (*Student setzt sich durch gegen Student)* yielded a transient actor EPA profile of [0.8, 1.9, 1.7], which is similar to the one of an executive (*Führungskraft)* in the German dictionary and was used to simulate the actions of those subjects in the authoritarian priming condition. The actions of the democratically primed students were simulated with the EPA profile of [1.3, 1.2, 0.9], the transient actor impression from the *Interact* simulation of a student convincing another student (*Student überzeugt Student)*. This is similar to the occupational identity of a *Facharbeiter* (skilled worker) in the German dictionary (Schröder 2008).

Manipulation of employee personality. In the Motivator One software, the a priori probability of the virtual agents showing specific behaviors was manipulated in order to assign different kinds of personality to them. One of the heads of department was programmed to perform especially helpful and supportive actions. For example, he would occasionally tell the subjects that he "enjoyed dealing with challenging tasks" and that "you can always count on me, boss!" These employee actions were simulated in *Interact* with the behavior support (*unterstützen* [3.0, 2.4, 0.7]). The second virtual agent was programmed to be especially rude in his communicative behavior. Among his most frequent utterances were "I'll give my staff hell in order to get them to work" and "How do you want me to get my damn work done if you behave like this, boss ?" These behaviors were simulated with the concept antagonize (*gegen sich aufbringen* [–1.8, 1.0, 1.4]). The third employee used to "retreat into his office", to "avoid contact with his staff", and to complain about his work rarely being appreciated. These actions were simulated using the concept avoid (*ausweichen* [–1.3, –0.7, –0.3]). The assignment of these employee personalities to the names, pictures, and positions of the virtual agents was balanced in a latin square type of design.

Dependent Variables

Impressions. Semantic Differential scales with opposite adjectives at each end were used to obtain ratings of the subjects' affective impressions of the virtual employees at the end of the experiment. The scales were the same as in the development of the German affective lexicon (Schröder 2008, forthcoming). In the experiment, the Evaluation-Potency-Activity scores of the virtual agents served as a check of the employee personality manipulation.

Actions. The computer registered any of the subjects' actions during the experiment. The relative frequency with which a participant chose behavior toward a specific employee from a particular category of leadership behavior in relation to the total number of the participant's actions toward that employee was used as the dependent variable for testing the social action hypothesis. The following 13 categories were available in the communications menu: praise, criticize, ask for the employee's opinion, set goals, give orders, inform about company goals, offer career opportunities, change salary, press for performance, demand cooperation, hold a technical discussion,

socialize with employees, and address a conflict. As the opposed actions of raising the employee's salary and refuse a request for salary increase were both contained in the change salary category, the latter was split; hence, there were 14 dependent variables in total.

When simulating these leadership actions with *Interact,* the category label from the software was employed in most cases. For example, the concept of praise (*loben)* contained in the German affective dictionary (Schröder 2008) was used to simulate the actions that the subjects chose from the first leadership category. There were two difficult cases, however, in which the category label did not seem to adequately reflect the affective meaning of the available phrases figuring in that category. First, in the goal-setting category, the concept challenge *(herausfordern)* seemed to better correspond to the affective tone of the available actions. Second, in the company-goals category, provoke (*reizen)* was seen to be more appropriate than the affectively positive behavior of informing. It should be noted that including or excluding the behavior from these two ill-defined categories from the data analysis did not alter the results of the experiment. All the EPA profiles used for simulating the leadership behaviors are displayed in Table 2.

Emotions. After completing the business simulation, the participants were asked to use a list of 40 emotion concepts to indicate which of the corresponding emotions they had experienced while interacting with each of the three virtual employees. For each of the six experimental conditions, the accumulated frequency with which an emotion concept was flagged on the lists was used as a measure for the observed probability of the corresponding emotion to occur in that particular actor-object constellation.

The list of emotion words had been designed to occupy the entire emotional space, according to established dimensional models of emotional meaning (Morgan and Heise 1988; Scherer 2005).

Procedure

The participants were assigned to authoritarian or democratic conditions based on the order of appearance and on a random sequence previously determined. The number of males and females in each condition was balanced. Upon arrival, a participant was welcomed by one of three experimenters and given a short description of the purpose of the experiment ("study the emotional dynamics in a leadership situation"). Subsequently, they were given a short introduction into Magic Monster Inc. and they had the opportunity to familiarize themselves with handling the software during a 15-minute trial phase. After that, the experimenter conducted the situational leadership interview with the participant. All of the experimenters had previously received extensive training to ensure that they closely followed the manual for the interview. Immediately after the interview, the subjects started on the task of running Magic Monster Inc. for a simulated year. After completion, they were handed out a questionnaire that contained the Semantic Differential items and the emotion word lists. Finally, they were thanked with a bar of chocolate, debriefed and given feedback.

RESULTS

Manipulation Check

Leadership style. After describing a leadership situation during the interview, subjects were asked to concentrate on the emotions involved in that situation and to flag the corresponding concepts on the list of 40 emotion words. These 40 concepts can be organized into five emotional meaning clusters, depending on all the possible combinations of positive or negative values on the E, P, and A dimensions (note that the P dimension is only necessary for distinguishing emotions similar to anger from emotions similar to fear, which are both negative and lively—see Morgan and Heise 1988). Table 1 presents the relative frequency of emotion concepts from the different clusters in the authoritarian versus democratic leadership situations. The (– + +) cluster with anger and the like accounted for most of the emo-

Table 1. Relative Frequency (%) of Reported Emotions, Organized in Clusters, Depending on the Authoritarian vs. Democratic Version of the Leadership Situations Interview

	Leadership Style	
Emotion Cluster	Authoritarian	Democratic
+ + +, e.g. happy	27.5	40.4
+ + –, e.g. satisfied	15.1	31.6
– + +, e.g. angry	31.2	12.2
– – +, e.g. alarmed	9.4	7.1
– – –, e.g. sad	16.8	8.7

tions in the authoritarian leadership situations whereas the (+ + +) cluster with emotion concepts similar to happiness dominates for the democratic experimental condition. The difference in the frequency distribution is statistically significant ($\chi^2 = 15.16$, $df = 4$, and $p < .01$).

Strictly speaking, this result does not prove that the subjects later retained the different self sentiments elicited by the interviews, but at least it may serve as evidence for the different affective meaning (consistent with the theory) of the remembered authoritarian versus democratic leadership situations.

Employee Personality. Interact predicts a transient impression of [1.5, 1.5, 0.5] for an employee that supports a student (*Mitarbeiter unterstützt Student)*. This is very similar to the average Semantic Differential rating of the participants' affective impression of the supportive employee: [2.0, 1.3, 0.2]. In contrast, the antagonizing employee was rated [–1.1, 1.2, 1.5] which was again very similar to the predicted EPA profile from the *Interact* simulation (*Mitarbeiter bringt Student gegen sich auf):* [–0.8, 1.0, 1.3]. Finally, the predicted impression of the withdrawn employee was [–0.3, –0.1, 0.1], while the obtained average rating was [–0.3, –0.8, –0.5]. Summarizing, manipulating the a priori probability of the virtual agents' actions can be considered successful in creating the intended affective impressions of them with the participants.

Actions

It was predicted that the subjects would be more likely to perform actions that cause lower deflections in simulations with *Interact,* using the German model of Affect Control Theory. As the experimental design involved 6 different actor-object constellations and 14 dependent variables, 84 interaction sequences were simulated to obtain deflection values and compare them with the observed relative frequency of the behavior in question. Because of limitations of space, the analysis will be demonstrated in detail only for the category of raising the employee's salary, which may serve as an example. For the remaining dependent variables, only a summary of the results is given (see Table 2); the detailed analyses are available upon request from the first author.

To calculate deflections, sequences of two events were simulated in *Interact* to account for the dynamic nature of the ongoing interactions. First, the virtual employee acted upon the subject, depending on his personality. Second, the subject answered using the behavior in question. The resulting deflection served to predict the outcome of the experiment. Here are four examples following the actor-behavior-object scheme (the German word *Mitarbeiter* [1.0, 0.3, 0.2] was used to simulate the employees):

1.EMPLOYEE—SUPPORT—DEMOCRATIC PARTICIPANT;
DEMOCRATIC PARTICIPANT—RAISE SALARY—EMPLOYEE
Resulting deflection: 4.86
2.EMPLOYEE—SUPPORT—AUTHORITARIAN—PARTICIPANT;
AUTHORITARIANPARTICIPANT—RAISE SALARY—EMPLOYEE
Resulting deflection: 7.99
3.EMPLOYEE—ANTAGONIZE—DEMOCRATIC PARTICIPANT;
DEMOCRATIC PARTICIPANT—RAISE SALARY—EMPLOYEE
Resulting deflection: 11.26
4.EMPLOYEE—ANTAGONIZE—AUTHORITARIAN PARTICIPANT;

Table 2. Juxtaposition of Deflection Values Derived from Interact Simulations, and Observed Relative Frequency (%) of Actions for All of the Experimental Conditions and 14 Categories of Leadership Behavior

	Deflection Employee			Frequency of Behavior (% of all behaviors) Employee		
Priming	Supp.	Antag.	Withd.	Supp.	Antag.	Withd.
DV: Praise employee [3.2, 1.8, 0.3]						
Authoritarian	9.07	15.11	12.68	21.56	19.08	22.39
Democratic	5.48	12.48	9.00	22.39	15.49	24.07
DV: Criticize employee [–1.1, 1.2, 1.1]						
Authoritarian	6.02	8.02	9.23	3.71	6.47	2.04
Democratic	6.07	8.12	9.04	3.63	4.98	2.75
DV: Ask for the employee's opinion [1.8, 1.1, 0.4]						
Authoritarian	6.84	11.03	9.77	8.66	7.59	7.95
Democratic	3.78	8.80	6.76	8.39	9.09	10.38
DV: Set goals [–0.0, 2.4, 2.0] (challenge, see explanation in the text)						
Authoritarian	5.07	7.06	8.4	12.71	11.86	11.29
Democratic	6.47	8.19	9.00	7.53	7.01	6.27
DV: Order [–0.2, 1.8, 1.3]						
Authoritarian	4.88	7.10	8.34	5.39	4.60	5.25
Democratic	5.06	7.27	8.04	5.50	5.22	6.20
DV: Inform about company goals [–0.7, 0.6, 0.9] (provoke, see expl. in the text)						
Authoritarian	6.15	8.55	8.88	7.38	5.96	5.63
Democratic	4.95	7.75	7.78	4.06	5.88	5.54
DV: Offer career opportunities [2.5, 1.1, 1.2]						
Authoritarian	7.04	12.25	9.95	4.25	3.53	5.46
Democratic	3.94	10.18	7.01	5.71	4.67	6.36
DV: Raise employee's salary [2.9, 1.9, 0.4]						
Authoritarian	7.99	13.56	11.71	3.13	1.76	1.84
Democratic	4.86	11.26	8.44	4.72	2.58	2.54
DV: Refuse employee's request for salary increase [–2.4, 1.1, 0.7]						
Authoritarian	9.53	11.04	13.09	1.61	1.74	0.43
Democratic	10.21	11.48	13.44	0.82	1.89	1.05
DV: Press for performance [0.1, 2.0, 1.7]						
Authoritarian	4.45	6.86	7.85	5.74	4.45	6.39
Democratic	4.97	7.34	7.81	4.65	4.92	2.39
DV: Demand cooperation [–1.4, 1.3, 0.2]						
Authoritarian	7.80	9.46	11.47	4.20	4.97	3.98
Democratic	7.46	9.05	10.81	6.31	7.88	5.59
DV: Hold a technical discussion [2.0, 1.8, 0.8]						
Authoritarian	5.98	10.46	9.53	7.89	4.78	7.49
Democratic	3.69	8.80	7.06	8.23	8.00	7.09
DV: Socialize with employees [2.5, 0.7, 0.0]						
Authoritarian	9.98	15.02	12.13	9.44	10.78	17.57
Democratic	5.59	11.87	8.00	12.84	10.31	15.09
DV: Address a conflict [–0.5, 1.7, 0.6]						
Authoritarian	5.86	7.86	9.51	4.16	12.21	2.44
Democratic	5.58	7.57	8.80	5.15	11.93	4.75

Note: EPA profiles for the dependent variables are averaged male and female ratings from the German affective dictionary (Schröder 2008). Note that in order to confirm ACT predictions, low deflections are expected to correspond with high frequencies of the behavior in question.

AUTHORITARIAN PARTICIPANT—RAISE SALARY—EMPLOYEE

Resulting Deflection: 13.56

These simulations yield the operational hypotheses of the experiment: the differences in deflection predict—along with common sense—that participants in the democratic priming condition are more likely to raise the pay of the employee, compared to those primed with the concept of authoritarian leadership. The second prediction is that a supportive employee is more likely to get a raise in pay than an antagonizing employee. The complete predictions for this dependent vari-

able are contained in Figure 2, whereas Figure 3 presents the corresponding relative frequency of behaviors as registered by the computer. Be aware that the relationship between deflection and the probability of the action is inverse. In order to confirm the predictions, high bars in Figure 2 should correspond with low bars in Figure 3. It can easily be seen that the predictions held up for all of the between-subjects contrasts: regardless of the employee's personality, granting a raise in pay causes more deflection for authoritarian leaders, and indeed, they were less likely to raise their employees' salaries during the business simulation. As for the employee personality manipulation, *Interact*'s predictions held up in five out of six possible within-subjects contrasts.

Table 2 contains all the predicted deflection values and the corresponding observed relative frequencies of behavior. These data can be used to assess the predictions of the social action hypothesis for all the contrasts involved by checking whether a lower deflection actually resulted in a higher frequency of the behavior.

In total, there were 42 between-subjects contrasts (14 dependent variables combined with three types of employees) for the leadership-style manipulation. Of these, 27 were correctly predicted by *Interact* in the way presented here. The binomial probability of obtaining 27 correct predictions out of 42 by pure chance is $p < .05$. Moreover, there was a significant positive correlation ($r = .32$, $p < .05$) between the difference in deflection and the effect size (*d)* over all the contrasts. The conclusion is that the mathematical ACT model not only predicted the direction of the effects beyond chance, but also their magnitude.

Comparisons between 3 types of employees combined with 2 types of leaders and 14 dependent variables yielded 84 possible within-subjects contrasts. Of these, 56 were correctly predicted by the simulations. The binomial probability of obtaining this result by chance is $p < .01$. The correlation between the difference in deflection and the effect size (*d)* over all the within-subjects contrasts was $r = .37$ ($p < .01$). The very same conclusion applies as for the analysis of the between-subjects contrasts. Apparently, different deflections calculated from the language-based ACT model accounted for differences in observed behavior during the experiment. The results corroborate the social action hypothesis.

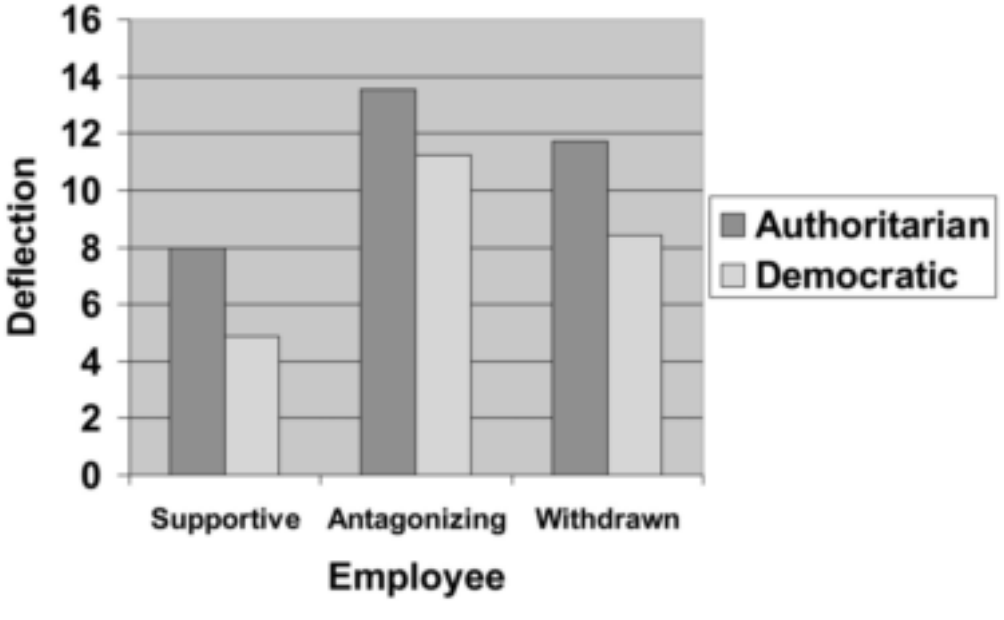

Figure 2. Affective Deflection Caused by Raising the Employees' Pay in the Different Conditions of the Experiment.

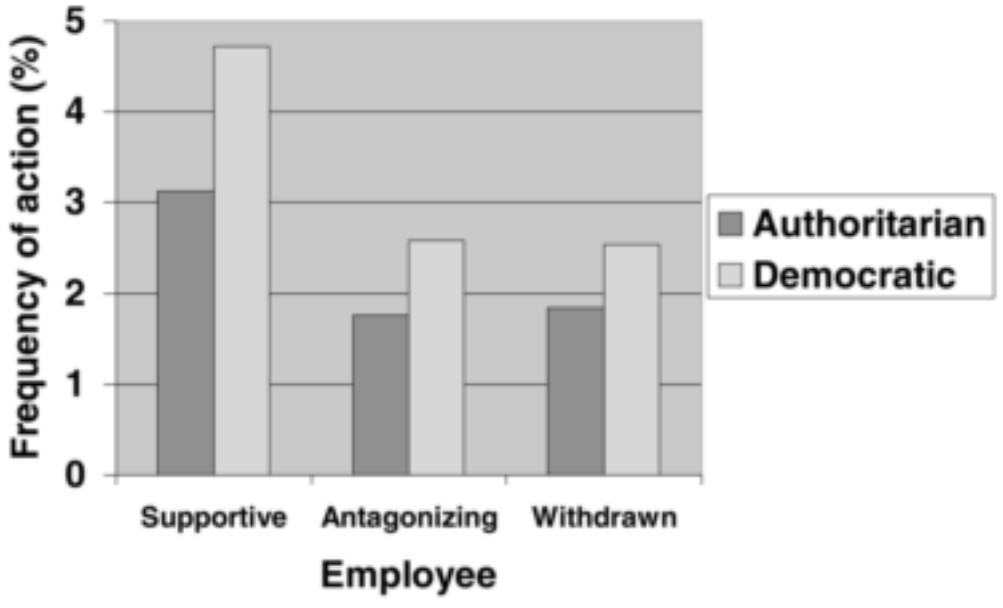

Figure 3. Observed Probability of Granting a Rise in Pay During the Experiment.

Emotions

In Affect Control Theory, emotions are experiential episodes following a social event. The affective structure of the language is hypothesized to influence the probability of specific emotions to occur. The probability can be predicted from the theory's mathematical model, depending on the location of the employed identities and behaviors in the three-dimensional affective space. For any given constellation of actor and object, there are not only optimal, mutually identity-confirming behaviors, but also "typical" emotional experiences that are semantically linked to the behaviors; those are called *structural emotions* (MacKinnon 1994:133–5). While the participants in the highly dynamic business simulation were expected to eventually experience all the forty emotions on the emotion word list handed out to them, the different emotions were predicted to occur with different frequencies, depending on the six actor-object configurations created with the experimental design. The predictions for these structural emotions were derived from *Interact* simulations of two consecutive events in a way similar to the one described above. First, an action of the virtual employee on the participants was simulated, depending on the employee's personality. Then, rather than simulating the participant's reaction using one of the available leadership behaviors, the mathematically optimal behavior was implemented to simulate the second event in the interaction. Take the following example: EMPLOYEE—SUPPORT—AUTHORITARIAN PARTICIPANT. The German *Interact* version suggests that a fictitious behavior with an EPA profile of [0.8, 1.5, 2.6] would be the participants' optimal response in order to confirm the fundamental sentiments of themselves and the supportive employee. Of course, no leadership behavior with exactly that EPA profile exists in the business simulation; the *Interact* prediction should thus be interpreted as the immediate affective action tendency toward that particular employee. Simulating the next event with such an action tendency as AUTHORITARIAN PARTICIPANT—[0.7, 1.5, 2.6]—EMPLOYEE yields an emotion prediction of [1.0, 0.2, 1.9]. That was interpreted as the structural emotion for the authoritarian leadership / supportive employee experimental condition. Table 3 contains the predictions for all of the conditions of the experiment. They were all derived in the way described here.

None of these predictions exactly matched any EPA profile of the emotion concepts on the list given to the subjects.

Table 3. Interact Emotion Predictions (EPA profiles) for the Six Experimental Conditions

	Employee Personality		
Priming Condition	Supportive	Antagonizing	Withdrawn
Authoritarian	[1.0, 0.2, 1.9]	[0.1, 0.4, 1.5]	[0.4, 0.2, 1.1]
Democratic	[1.0, –0.1, 1.2]	[–0.1, 0.4, 0.7]	[0.5, 0.2, 0.5]

However, the structural emotion predictions can be used to derive operational emotion hypotheses from Affect Control Theory's mathematical model. The closer the location of an emotion concept is to the predicted emotion in the affective space, the higher the probability of the corresponding emotion is to occur. Consequently, for all of the 40 concepts on the emotion word list, Euclidean distances from the corresponding EPA profiles to the predicted structural emotion were calculated separately for each of the experimental conditions. These distances were compared with the observed probabilities of the emotion concepts to be flagged by the subjects as describing their emotional experience while interacting with the virtual employees. The resulting correlations are displayed in Table 4. As had been assumed in the emotion hypothesis, all of the correlations were negative. Most of them were statistically significant and can be considered substantial. In total, the result can be interpreted as lending support to the emotion hypothesis as well. Not only did the participants act as predicted by *Interact* when running Magic Monster Inc., but they also experienced the predicted emotions.

DISCUSSION

The results of the experiment seem to corroborate one of the central propositions of Affect Control Theory: impression formation based on verbal descriptions of social events and formalized in mathematical models corresponds to impression formation processes that occur during realistic social interactions. Before discussing theoretical consequences for applying Affect Control Theory to leadership, we comment on some strengths and possible shortcomings of our experiment and on the experimental method in general.

Critical Review of the Experiment

While the overall results of the experiment are clearly in line with Affect Control Theory's predictions beyond chance, the obtained effects seem rather small. Only two-thirds of the contrasts between experimental conditions are correctly predicted, and the reported correlations are only small to medium in size, regardless of whether actions or emotions were predicted. What does that outcome mean for the power of the ACT model to account for the subjects' behaviors and experiences?

One might draw the conclusion that additional cognitive or motivational processes have to be assumed to get a complete explanation of the social interaction that took place. The participants not only found themselves in a situation where social interaction was required from them, but they were also expected to solve the complex problem of successfully running a virtual company. Often, following their affective action tendencies would impede effective problem solving. For exam-

Table 4. Correlations of Euclidean Distances from the Predicted Emotion to 40 Emotion Concepts with the Frequency of These Emotions as Indicated by the Subjects, Separate for the Six Experimental Conditions

	Employee Personality		
Priming Condition	Supportive	Antagonizing	Withdrawn
Authoritarian	–.23*	–.61***	–.18
Democratic	–.40***	–.40***	–.27**

* Borderline significant at $p < .10$
** Significant at $p < .05$
*** Significant at $p < .01$

ple, the subjects might have had the desire to reprimand the rude employee every once in a while. Doing so, however, would have had a negative impact on the economic state of the virtual company, because Magic Monster Inc. has been programmed to teach young executives to create positive rather than negative motivational states in their employees. Thus, operant conditioning was also involved in the experiment. The participants can be assumed to have learned that praising the rude virtual employee from time to time was a successful strategy due to the logic of the software, even though criticizing him would have been the more adequate reaction according to their sentiments.

There are also some methodological aspects to consider. One problem can be found in the fictitious situation of the experimental game. The student subjects played a management role and thus could not act on a pure student identity nor a real managerial identity; giving them a definite identity in the *Interact* simulation could most probably not be a perfect match. Another related problem lies in the restricted, albeit large, lexicon of 1,100 words, rated on the EPA dimensions, which makes it more difficult to find the words best suited to describe the ongoing events with appropriate actors, behaviors, and target persons. Finally, priming subjects through self-reports of specific former more autocratic or more democratic actions is not the same as being an authoritarian or a democratic leader. The obtained behavioral effects may be much less pronounced, especially because the priming effects are likely to diminish or even disappear in the course of actions and reactions. All these methodological aspects are likely to reduce the exactness of the test.

Nevertheless, the parsimonious affect control principle has proven to account for a substantial portion of subjects' behavior and their emotional experiences during the experiment. After all, the predictions were obtained by simulating a simple interaction sequence composed of only two events. A simple model can never be expected to account completely for phenomena in the real world. Given the very complex and highly dynamic situation in which the subjects found themselves while running the virtual company, the clear picture of the results in favor of the hypotheses derived from Affect Control Theory can be considered quite impressive. While their conscious attention was bound to rational economic problem solving, the subjects seemed to use their actions to validate their feelings of the situation, just as ACT proposes.

Comments on Affect Control Theory and the Experimental Method

It should be noted that considerable trial and error was involved in creating the *Interact* simulations of the experiment before finding the exact ones presented here and that matched the observed behaviors and reported emotions in the experiment so well. This problem was already noted above as a possible explanation of the low effect size. The issue could be raised as to whether these simulations can still be considered as "predictions" or if, rather than that, they are post hoc explanations. The trouble with post hoc explanations in experimental psychology is hindsight bias (Fischhoff and Beyth 1975), also known as the "I knew it all along" effect. After knowing the results, experimenters unconsciously change their hypotheses about them, as most scientists are more or less motivated to see their hypotheses confirmed. The advantage of using a software like *Interact* for generating hypotheses about the outcome of an experiment is that the mathematical algorithm involved is immune to hindsight bias.

The important question is: What does it mean to simulate the results of an experiment, and what does it not mean? Even though most experimental psychologists follow an epistemological ideal stemming from the natural sciences (Pettigrew 1991), there is a fundamental difference between a physics or chemistry experiment and a social psychological one, in that the latter studies humans in social situations and humans always ascribe meaning to social situations (including experiments). The notion that humans always base their actions on the meaning that they ascribe to a situation stems from symbolic interactionism (Blumer 1969), many of whose proponents have adopted an epistemological position

opposed to that of experimental psychologists, rejecting quantitative and experimental methods. Perhaps, one of the most important strengths of Affect Control Theory lies in its potential to reconcile symbolic interactionism taught in sociology departments with experimental social psychology taught in psychology departments (see Stryker 1977; Stephan, Stephan, and Pettigrew 1991; Scholl 2007 for discussions of the two social psychologies). Experiments are social situations which experimenters as well as participants interpret by relying on their language. There is no objective or even mathematical way to define the meaning of such a situation. But once an interpretation is made, it is possible to mathematically model and experimentally test the behavioral and emotional consequences of the interpretations.

Running an *Interact* simulation means translating the verbal definition of a situation into the mathematical ACT model (Schneider and Heise 1995). When simulating interactions that occur during an experiment, the researcher has to ensure that his definition of the situation closely matches the subjects' definition of the situation given by the independent conditions. If, and only if a sufficient overlap exists in interpreting the meaning of the independent manipulation, any positive results of the experiment can be taken as evidence for the theory. In the present experiment, the positive manipulation-checks corroborate the assumption that the participants more or less perceived the situation in the way it was labeled in the simulations. Thus, it seems warranted that this experiment presents a serious test of Affect Control Theory. The self-sentiments of the participating subjects evoked in the leadership interview, as well as their impressions of the virtual employees at the end of the experiment, were linked to their actions and perceived emotional states during the business simulation in the way the mathematical ACT model predicted it.

Affect Control Theory and Leadership

As evidence was found for the Social Interaction hypothesis, the affect control theory of leadership first presented by Schneider (2002) and extended in the present paper is also bolstered. A good deal of the leadership behavior examined in the experiment can be explained by the general affect control principle of using actions to create sentiment-confirming impressions. It is especially interesting to see that evoking authoritarian versus democratic situational self-definitions actually resulted in different leadership behaviors during the experiment. The behavioral impact of assuming different self-definitions of the leader can be seen as a parsimonious explanation for subjective theories of leadership influencing social interaction. In the experiment, these subjective theories were generated by the manipulation. In real life, they may stem from a variety of sources including interpersonal aspects of the leader's personality, management ideologies learned at business schools, or even organizational cultures.

Obviously, more research on Affect Control Theory and leadership is needed. Even though Magic Monster Inc. is considered by practitioners to realistically model the requirements for real business leaders (Ollesch 2001), it remains, after all, a computer scenario. The subjects in the experiment were all students and not real business leaders, who almost certainly differ from students in their self-definitions as well as in behavioral techniques acquired in practice. A lot could be learned from repeating the described experiment with participants from an MBA program. Questionnaire or interview-based field studies could contribute important evidence from real organizations to the proposed affect control theory of leadership.

Despite all these limitations, the experiment reported here in combination with Schneider's (2002) simulation results proves the application of Affect Control Theory to leadership to be a fruitful area. The theory provides a fairly contrasting view on leadership, compared to most of the established theoretical traditions in the management literature. Leaders' decisions and actions are not seen as primarily motivated by conscious efforts to align employees' behaviors with organizational goals, but rather by the affective desire to maintain cultural definitions of leaders' and employees' social roles. This per-

spective opens up a whole series of interesting questions that should be addressed in further research. To name only a few examples: Under which circumstances are the leader's affective behavioral tendencies beneficial to attaining the goals of the organization? When are they harmful? How do leaders manage to refrain from actions that seem emotionally appropriate to them but that might impede goal attainment?

REFERENCES

Averett, Christine P. and David R. Heise. 1987. "Modified Social Identities: Amalgamations, Attributions, and Emotions." *Journal of Mathematical Sociology* 13:103–32.

Blumer, Herbert. 1969. *Symbolic Interactionism: Perspective and Method.* Berkeley, CA: University of California Press.

Danserau, Fred, George B. Graen, and William J. Haga. 1975. "A Vertical Dyad Linkage Approach to Leadership within Formal Organizations." *Organizational Behavior and Human Performance* 13:46–78.

Fischhoff, Baruch and Ruth Beyth. 1975. "I Knew It Would Happen: Remembered Probabilities of Once-future Things." *Organizational Behavior and Human Performance* 13:1–16.

Fleishman, Edwin A. and Edwin E. Harris. 1962. "Patterns of Leadership Behavior Related to Employee Grievances and Turnover." *Personnel Psychology* 15: 43–56.

Halpin, Andrew W. and B. James Winer. 1957. "A Factorial Study of the Leader Behavior Descriptions." Pp. 39–51 in *Leader behavior: Its description and measurement,* edited by Ralph M. Stogdill and Alvin E. Coons. Columbus, OH: Ohio State University.

Heineken, Edgar, Jens Lohaus, and Heike Ollesch. 1996. *Manpower. Computersimulation einer komplexen Führungswirklichkeit. Software und Benutzerhandbuch.* (Computer Simulation of a Complex Leadership Situation. Software and Manual.) Duisburg, Germany: Gerhard-Mercator-Universität.

Heineken, Edgar, Heike Ollesch, and Margarethe Stenzel. 2003. „Führungsverhalten unter Stress: ein organisationspsychologisches Experiment in virtueller Umgebung." (Leadership Behavior in Stressful Situations: An Organizational Psychological Experiment in a Virtual Environment.) *Zeitschrift für Arbeits- und Organisationspsychologie* (Journal of Work and Organizational Psychology) 47: 123–33.

Heise, David R. 1979. *Understanding Events: Affect and the Construction of Social Action.* New York: Cambridge University Press.

———. 1997a. *Affect Control Theory Website.* Retrieved June 15, 2008, from http://www.indiana.edu/~socpsy/ACT.

———. 1997b. *Interact. Introduction and Software.* Retrieved May 30, 2008, from http://www.indiana.edu/~socpsy/ACT/*Interact*.htm.

———. 2001. "Project Magellan: Collecting Cross-cultural Affective Meanings Via The Internet." *Electronic Journal of Sociology* 5 (3): http://www.sociology.org/content/vol005.003/mag.html.

———. 2007. *Expressive Order: Confirming Sentiments in Social Action.* New York: Springer.

Heise, David R. and Cassandra Calhan. 1995. "Emotion Norms in Interpersonal Events." *Social Psychology Quarterly* 58: 223–40.

Heise, David R. and Neil J. MacKinnon. 1987. "Affective Bases of Likelihood Judgments." *Journal of Mathematical Sociology* 13: 133–151.

Johnson-Laird, Philip N. 1983. *Mental Models: Towards a Cognitive Science of Language, Inference, and Consciousness.* Cambridge, MA: Harvard University Press.

Lewin, Kurt, Ronald Lippitt, and Ralph K. White. 1939. "Patterns of Aggressive Behavior in Experimentally Created Social Climates." *Journal of Social Psychology* 10: 271–301.

MacKinnon, Neil J. 1994. *Symbolic Interactionism as Affect Control.* Albany, NY: State University of New York Press.

Morgan, Rick L. and David R. Heise. 1988. "Structure of Emotions." *Social Psychology Quarterly* 51:19–31.

Ollesch, Heike. 2001. *Computerszenarios als Trainingstools—Polytelie und Wissenserwerb.* (Computer Scenarios as Tools for Training—Multiple Goals and the Acquisition of Knowledge.) Dissertation, Gerhard-Mercator-Universität, Duisburg

Osgood, Charles. E., William H. May, and Murray S. Miron. 1975. *Cross-ultural Universals of Affective Meaning.* Urbana, IL: University of Illinois Press.

Osgood, Charles E., George J. Suci, and Percy H. Tannenbaum. 1957. *The Measurement of Meaning.* Urbana, IL: University of Illinois Press.

Pettigrew, Thomas. F. 1991. "Toward Unity and Bold Theory: Popperian Suggestions for Two Persistent Problems of Social Psychology." Pp. 13–27 in *The Future of Social Psychology,* edited by Cookie W. Stephan, Walter G. Stephan, and Thomas F. Pettigrew. New York: Springer.

Robinson, Dawn T. and Lynn Smith-Lovin. 1992. "Selective Interaction as a Strategy for Identity Maintenance: An Affect Control Model." *Social Psychology Quarterly* 55:12–28.

Robinson, Dawn T., Lynn Smith-Lovin, and Olga Tsoudis. 1994. "Heinous Crime or Unfortunate

Accident? The Effects of Remorse on Responses to Mock Criminal Confessions." *Social Forces* 73:175–90.

Scherer, Klaus R. 2005. "What are Emotions? And How Can They Be Measured?" *Social Science Information* 44:693–727.

Schneider, Andreas and David R. Heise. 1995. "Simulating Symbolic Interaction." *Journal of Mathematical Sociology* 20: 271–87

Schneider, Andreas. 2002. "Behavior Prescriptions Versus Professional Identities in Multi-cultural Corporations: A Cross-cultural Computer Simulation." *Organization Studies* 23:105–31.

Scholl, Wolfgang. 2007. Plädoyer für eine sozialere und dadurch interdisziplinärere und anwendbarere Sozialpsychologie. (Plea for a More Social, Interdisciplinary, and Applicable Social Psychology). *Zeitschrift für Sozialpsychologie* (Social Psychology) 38: 285–96.

Schröder, Tobias. Forthcoming. *Die Affektsteuerungstheorie als allgemeine Theorie der sozialen Interaktion.* (Affect Control Theory as a General Theory of Social *Interac*tion). Dissertation, Humboldt-Universität zu Berlin.

———. 2008. Mean Affective Ratings of 1,100 Concepts by a Diverse Sample of Germans in 2007 [computer file]. Distributed at Affect Control Theory Website, Program *Interact;* http://www.indiana.edu/~socpsy/ACT/Interact/JavaInteract.html.

Smith, Herman W., Takanori Matsuno, and Michio Umino. 1994. "How Similar Are Impression-formation Processes Among Japanese and Americans?" *Social Psychology Quarterly* 57: 124–39.

Smith-Lovin, Lynn and William Douglass. 1992. "An Affect Control Analysis of Two Religious Subcultures." Pp. 217–248 in *Social Perspectives in Emotions,* edited by Viktor Gecas and David Franks. Greenwich, CT: JAI Press.

Smith-Lovin, Lynn 1987. "Impressions From Events." *Journal of Mathematical Sociology* 13:35–70.

Stephan, Cookie W., Walter G. Stephan, and Thomas F. Pettigrew. Eds. 1991. *The Future of Social Psychology.* New York: Springer.

Stogdill, Ralph M. 1950. "Leadership, Membership, and Organization." *Psychological Bulletin 47:*1–14.

Stryker, Sheldon. 1977. "Developments in Two Social Psychologies: Toward an Appreciation of Mutual Relevance." *Social Psychology Quarterly* 40:145–60.

Swann, William B. and Stephen J. Read. 1981. "Self-Verification Processes: How we Sustain Our Self-conceptions." *Journal of Experimental Social Psychology* 17: 351–72.

Weber, Max. [1922] 1990. *Wirtschaft und Gesellschaft* (Economy and Society).5th Ed.. Tübingen, Germany: Mohr.

Wiggins, Beverly and David R. Heise. 1987. "Expectations, Intentions, and Behavior: Some Tests of Affect Control Theory." *Journal of Mathematical Sociology* 13: 153–69.

Tobias Schröder *is a PhD candidate in psychology at the Humboldt-Universität zu Berlin, Germany. His research interests include social interaction, emotion, and the social psychology of political decision making.*

Wolfgang Scholl *is a professor of Organizational and Social Psychology at the Humboldt-Universität zu Berlin with research interests in power and influence, knowledge production, teamwork, innovation, and basic dimensions of social interaction.*