MODELING SOCIAL INTERACTIONS
NEW DIRECTIONS IN AFFECT CONTROL THEORY

Dartmouth College • Hanover, New Hampshire • June 22-24, 2017

Affect control theory examines how sentiment norms—our culturally shared meanings for particular types of actors, behaviors, emotions, and social settings—organize social life and direct us toward a mutual interpretive framework for interaction. As common cultural knowledge, sentiment norms allow us to plan for, interpret, and effectively respond to social events, based on our impressions of who has done what to whom. By measuring both normative sentiments and how these sentiments shift when they combine in the context of social events, affect control theorists have built causal models of the relationship between interpretations of events and patterns of social action. These "impression change" models were first developed in the late 1970s, and have been used in conjunction with data about cultural sentiment norms to run mathematical simulations of social interaction. Event simulations generate testable predictions about behavioral and emotional responses to social events, which have been supported by a large body of survey, experimental, and naturalistic evidence in a research program spanning several decades.

A wave of recent methodological innovations and theoretical developments has rapidly pushed knowledge forward in this subject area. In the past several years, affect control theory has been expanded to account for the role of the self and social institutions in shaping situational identity dynamics. A Bayesian extension of the theory has enabled new research on the impacts of cultural diversity, situational uncertainty, and communication noise on interaction dynamics. A massive multinational data collection effort has produced new models of social interaction in U.S. culture, and enabled research on impression change processes in Arabic language cultures like Egypt, Kuwait, and Morocco. Scholars have explored new methods of estimating impression change equations and assessing the quality of their performance, and examined individual differences and change over time in the central mechanisms of impression formation. *Modeling Social Interactions* will review these and other new directions in affect control theory, and provide a space for meetings on new and ongoing collaborations.

This event is sponsored by the Neukom Institute for Computational Science, the Office of the President, the Office of the Dean of Faculty, and the Program in Quantitative Social Science at Dartmouth College. Many thanks for your generous support!

#ACTDartmouth

Program Schedule

Wednesday, June 21	
Afternoon	Participants arrive
7:00 pm	Dinner off-site (participants on their own)

Thursday, June 22	
8:00–9:00 am	Breakfast (*Hayward Room*)
9:00–9:15 am	Opening remarks
9:15–10:15 am	Keynote #1: **Lynn Smith-Lovin**, *Affect Control Theory: A Primer*
10:15–10:30 am	Break
10:30–12:00 pm	Thematic Session #1: Impression Change Revisited • **Dawn Robinson**, *Modeling Arabic Language Impression Change* • **Jun Zhao**, *Modeling the Affective Basis of Morality and Justice among Chinese* • **Jonathan Morgan, Kimberly Rogers,** and **Mao Hu**, *Four Approaches to Modeling Impressions of Social Events* • **Rohan Lulham** and **Daniel Shank**, *Tangible Products as Modifiers of Identities* • **Daniel Shank**, *Affective Impressions of Groups versus Individuals in Interactions**
12:00–12:30 pm	Lunch served
12:30–1:30 pm	Methods Conference #1: **Jonathan Morgan**, *Data Collection with Surveyor 3.0*
1:30–2:30 pm	Keynote #2: **Neil MacKinnon**, *Recent Developments in Affect Control Theory*
2:30–2:45 pm	Break (*relocate to Ford Sayre/Brewster*)
2:45–3:45 pm	Thematic Session #2: Status and Power • **Andreas Schneider**, *Complementary Patterns of Dominance and Submission* • **Kimberly Rogers**, *Privilege and Social Action* • **Robert Freeland** and **Jesse Hoey**, *Modeling Occupational Status Using Affect Control Theory* • **Celeste Campos-Castillo** and **Kathryn Lively**, *Sex Differences in the Effects of Role Atypicality on Status in Groups* • **Marshall Schmidt**, *Conceptions of Status and Perceptions of Crime**
3:45–4:45 pm	Thematic Session #3: Gender • **Jonathan Morgan**, *The Role of Gendered Identities in Impression Formation* • **Robert Freeland** and **Catherine Harnois**, *A Multidimensional Model of Occupational Gender Stratification* • **Amy Kroska** and **Trent Cason**, *The Gender Gap in Business Leadership*

	• **Celeste Campos-Castillo** and **stef shuster**, *Modeling Voter Ideology and Responses toward Public Policies with Affect Control Theory* • **Kaitlin Boyle** and **Chase Meyer**, *Deflection in the 2016 Election: Gender, Perceptions, and Voting Intentions**
4:45–5:00 pm	Closing remarks
5:00–6:00 pm	Break
6:00 pm	Reception (*South House, 5 Sanborn Road*)

Thursday Locations

- *8:00 am–2:30 pm, all events held in Hayward Room, Ground Floor, Hanover Inn*
- *2:30 pm–5:00 pm, all events held in Ford Sayre/Brewster, Lower Level, Hanover Inn*
- *Meet in Hanover Inn lobby at 5:45 pm to walk over to the reception at South House*

Friday, June 23	
8:00–9:00 am	Breakfast (*Hayward Room*)
9:00–9:15 am	Opening remarks
9:15–10:15 am	Keynote #3: **Jesse Hoey**, *Introduction to Bayesian Affect Control Theory*
10:15–10:30 am	Break
10:30–12:00 pm	Thematic Session #4: Novel Methods and Methodological Applications • **Linda Francis** and **Kathryn Lively**, *Affect Control Theory as a Qualitative Analysis Schema* • **Joshua Jung** and **Jesse Hoey**, *Bayesian Affect Control Theory and the Iterated Networked Prisoner's Dilemma* • **Areej Alhothali** and **Jesse Hoey**, *Semi-Supervised Affective Meaning Lexicon Expansion Using Semantic and Distributed Word Representations* • **David Choi, Robert Freeland**, and **Jesse Hoey**, *Occupational Social Status Modeling with ACT and BayesACT**
12:00–12:30 pm	Lunch served
12:30–1:30 pm	Methods Conference #2: **Kimberly Rogers, Jesse Hoey, and Douglas Hill,** *Simulating Interactions with BayesACT*
1:30–2:30 pm	Keynote #4: **Tobias Schröder**, *Bayesian Affect Control Theory of Self*
2:30–2:45 pm	Break (*relocate to Ford Sayre/Brewster*)
2:45–3:45 pm	Thematic Session #5: Deflection, Variance, and Meaning • **Jessica Collett** and **Kayla Pierce**, *Understanding Ambiguous Events* • **Brent Curdy**, *Error Revisited: The Meaning and Ramifications of Variance for Affect Control Theory* • **Chelsea Rae Kelly**, *Discordantly Meaningful: Examining Cognitive Mechanisms of Culture and Action* • **Bryan Cannon**, **Chelsea Rae Kelly**, and **Dawn Robinson**, *Improbable Events: A Cross-Cultural Examination of Deflection Across Institutions in the US and Egypt**

3:45–4:45 pm	Thematic Session #6: Self and Identity • **Kenny Joseph**, *The Identity Labeling Problem* • **Rohan Lulham** and **Daniel Shank**, *Affie: An Affective Thesaurus for the Professional and the Curious* • **Kaitlin Boyle**, *Using Self-Sentiments to Predict Identity and Behavior* • **Kimberly Rogers** and **Kaitlin Boyle**, *Identity Coherence and Well-Being** • **Kathryn Lively**, *Identity Transformation and Weight-Loss: Altering Fundamental Sentiments in an Online Community**
4:45–5:00 pm	Closing remarks
5:00–6:00 pm	Break
6:00 pm	Dinner off-site (participants on their own)

Friday Locations

- *8:00 am–2:30 pm, all events held in Hayward Room, Ground Floor, Hanover Inn*
- *2:30 pm–5:00 pm, all events held in Ford Sayre/Brewster, Lower Level, Hanover Inn*

Saturday, June 24	
8:00–9:00 am	Breakfast (*Ford Sayre/Brewster*)
9:00–9:15 am	Opening remarks
9:15–10:45 am	Collaborative Research Meetings, Session #1
10:45–11:00 am	Break
11:00–12:30 pm	Collaborative Research Meetings, Session #2
12:30–1:30 pm	Lunch served
1:30–2:30 pm	Incubator Session #1: Topic TBD
2:30–2:45 pm	Break
2:45–3:45 pm	Incubator Session #2: Topic TBD
3:45–4:45 pm	Group discussion
4:45–5:00 pm	Closing remarks
5:00–6:00 pm	Break
6:00 pm	Dinner off-site (participants on their own)

Saturday Locations

- *8:00 am–5:00 pm, all events held in Ford Sayre/Brewster, Lower Level, Hanover Inn*

Sunday, June 25	
Morning	Participants depart

** Denotes 5-minute flash talk on work in development or in progress.*

Conference Participants

Name	Affiliation	Email
Areej Alhothali	University of Waterloo	aalhotha@uwaterloo.ca
Kaitlin Boyle	Virginia Tech	kmboyle@vt.edu
Celeste Campos-Castillo	U Wisconsin - Milwaukee	camposca@uwm.edu
Bryan Cannon	University of Georgia	bccannon@uga.edu
Trent Cason*	University of Oklahoma	trent.c.cason-1@ou.edu
David Choi*	University of Waterloo	d27choi@uwaterloo.ca
Jessica Collett*	University of Notre Dame	jlcollett@nd.edu
Brent Curdy	Duke University	brent.curdy@duke.edu
Linda Francis	Cleveland State University	l.e.francis@csuohio.edu
Rob Freeland	Wake Forest University	freelare@wfu.edu
Catherine Harnois*	Wake Forest University	harnoice@wfu.edu
Douglas Hill	Dartmouth College	douglas.p.hill@dartmouth.edu
Jesse Hoey	University of Waterloo	jhoey@cs.uwaterloo.ca
Mao Hu*	Acumen, LLC	mao.i.hu@gmail.com
Kenny Joseph	Northeastern University	josephkena@gmail.com
Josh Jung	University of Waterloo	joshjung@live.ca
Chelsea Rae Kelly	University of Georgia	kellycr@uga.edu
Amy Kroska	University of Oklahoma	amykroska@ou.edu
Hamid Latif*	American U in Cairo	latif@ertcegypt.com
Kathryn Lively	Dartmouth College	kathryn.lively@dartmouth.edu
Rohan Lulham	U of Technology - Sydney	rohan.lulham@uts.edu.au
Neil MacKinnon	University of Guelph	nmackinn@uoguelph.ca
Chase Meyer	U South Florida - St. Pete	chasebmeyer05@gmail.com
Jonathan Morgan	Duke University	jonathan.h.morgan@duke.edu
Kayla Pierce	University of Notre Dame	kpierce2@nd.edu
Cayla Plotch	Dartmouth College	cayla.r.plotch.19@dartmouth.edu
Dawn Robinson	University of Georgia	sodawn@uga.edu
Kimberly Rogers	Dartmouth College	krogers@dartmouth.edu
Marshall Schmidt	University of Oklahoma	marshall.r.schmidt-1@ou.edu
Andreas Schneider	Texas Tech University	andreas.schneider@ttu.edu
Tobias Schröder*	Potsdam U of Applied Sci.	post@tobiasschroeder.de
Daniel Shank	Missouri Science & Tech	shankd@mst.edu
Annie Sherrill	Dartmouth College	anne.f.sherrill.19@dartmouth.edu
stef shuster*	Appalachian State U	shustersm@appstate.edu
Lynn Smith-Lovin	Duke University	smithlov@soc.duke.edu
Abdelhadi Soudi*	ENSMR Morocco	asoudi@gmail.com
Jun Zhao	University of Georgia	junzhao@uga.edu

** Denotes those on the conference program who will not be in attendance.*

Abstracts

Thursday, June 22

Modeling Arabic Language Impression Change

Dawn T. Robinson, *University of Georgia*
Lynn Smith-Lovin, *Duke University*
Jun Zhao, *University of Georgia*
Jonathan Morgan, *Duke University*
Brent Curdy, *Duke University*
Kimberly B. Rogers, *Dartmouth College*
Abdelhadi Soudi, *Ecole Nationale Supérieure des Mines*
Hamid Latif, *Egyptian Research and Training Center*

The Arabic speaking world offers a unique opportunity for affect control theorists to analyzing impression change dynamics within markedly different cultures using the same formal language. In this talk, we report on the findings of two major new impression change studies – conducted in Morocco and Egypt. We compare these findings across the two Arabic speaking cultures and to new impression change models from the Unites States. We find both important similarities and meaningful differences between U.S. English and Egyptian Arabic impression change in the context of social events. Impressions of actor evaluation after a social event are highly similar across the cultural models. However, there is a pattern of lower "stability" coefficients in the Egyptian impression change models (i.e., the ability to predict the affective impression of a person or behavior within the context of a social event from the general affective sentiment associated with that type of person or action in general, with no event context). This striking pattern may indicate that Arabic-speakers are more sensitive to the context of social interaction than U.S. English-speakers. Our models suggest a greater fluidity in Arabic culture, of both their own identities and the identities of others, as social actors move through social settings.

A second general focus of differences between the Arabic and US impression change models is around impressions of the objects of social actions. Many of the differences between Egyptians and U.S. respondents were concentrated in models predicting impressions of the objects of social events. The substantial differences in impression change with regard to the object-person, combined with the lower stability coefficients in all three of the object-person models, leads us to conclude that Arabic speakers might see themselves and others quite differently when they are acted upon in social situations, when compared with U.S. English speakers. The fact that emotions are also predicted by movement in this affective space (under the affect control theory model) implies that the emotional experiences and displays of Arabic speakers when they are acted on in social situations may be less like their "characteristic emotions" that come from maintaining the sentiment meanings of their fundamental identities, and more influenced by the situation that they find themselves in—particularly the evaluative character of the actor and the affective meanings of the behavior on all three dimensions (evaluation, potency and activity) and the consistency of the behavior with the evaluation of their own identity. We conclude by presenting a series of affect control theory simulations of cross-cultural interactions that illustrate the interactional consequences of the differences in affective processing of events as well as the sentiments associated with specific social concepts.

Modeling Affective Basis of Morality and Justice among Chinese

Jun Zhao

Department of Sociology

University of Georgia

ABSTRACT

Building on decades of research on how affective sentiments organize social life through social interaction and recent methodological innovation on model specification, this study offers the first investigation on how social events shift normative sentiments among Chinese. Using Bayesian Model Sampling (BMS) techniques, I estimate determinants of normative sentiments changes in social events using data collected in China in 1990s. Then, I compare the processes of impression change cross-culturally between Chinese and Americans. In modeling a set of impression-change equations using Structural Equation Model (SEM), my results suggest evidence for the cross-cultural similarity in regard to cognitive processing of impression formation. Findings also reveal culturally nuanced moral responses to transgression. While both Americans and Chinese value positively the law of retaliation, or "an eye for an eye" strategy (i.e., the effect of BeOe on Ae' and Be'), Chinese also believes that a benevolent person, as well as his/her act, is more virtuous if he/she returns good for the enemy (i.e., the negative effect of AeBeOe on Ae' and Be'). American culture, on the other hand, shows an opposite moral standard of justice that people grant more positive evaluations to esteemed actors who "return justice for evil" (i.e., the positive effect of AeBeOe on Ae' and Be'). Implications on the affective basis of morality and justice is discussed.

Integrated Impression Formation Equations for U.S.A. and China, Showing Significant Differences in Coefficients among Culture

Ae' = -.07 US + .05 Female + (.41 | .52) Ae + .62 Be - .09 Ba + .04 Op + .11 AeBe + .33 BeOe - .10 BeOp + (-.15 | -.07) BpOe + **(-.10 | +.07) AeBeOe** + .03 AeBpOp + .03 ApBeOa

Ap' = -.05 US + (.48 | .77) Ap + (0 |-.05) Ae + (0 | -.24) Be + .36 Bp - .06 Ba + (0 | .05) Aa + .04 Oe + .10 BeOe - .12 ApBp + .10 ApBe

Aa' = -.16 US + (.39 | .84) Aa + .07 Ae + (0 |-.15) Be + (.21 | .30) Ba - .06 Ap + (0 | .11) Bp + .05 Op + .03 AeBa - .08 AaBa + .03 BeOe

Be' = -.07 US + .85 Be + .16 Ae + (-.18 |-.11) Ba + .04 Op + .06 AeBe + .28 BeOe - .09 BeOp + **(-.04 |.107) AeBeOe** + .05BpOp - .02 BpOe

Bp' = -.12 US + .06 Female + (.26| .80) Bp + .24 Ap + (0 | -.33) Be + .06 Oe + .08 BeOe + .08 AeBe

Ba' = .09 Female + (.31| .72) Ba + (0 |-.07) Ap + (.14 |.55) Aa + (0 |-.08) Be+ (.05|.11) Bp + .04 Ae

Oe' =.10 Female + (.58| .91) Oe + (.06| .18) Be + .10 AeBe + (0 | .11) BeOe + .05AeBeOe

Op' = -.16 US + (.44 |.79) Op + (0 |.31) Be -.11 Bp + (-.12 | -.21) Oe + .04 Oa + (0 | .06) BeOe + .04 AeBp + .02AaOp - .02 ApBpOa + .10 Ba - .05 ApBaOp + .04BaOe

Oa' = (.38 |.87) Oa - .05 Op

Note: Significant differences on coefficient estimations between U.S. and China are shown in parentheses, with the Chinese value first, U.S.A. second, separated by a vertical pipe (|).

All coefficients are standardized.

Four Approaches to Modeling Impressions of Social Events

Jonathan H. Morgan, *Duke University*
Kimberly B. Rogers, *Dartmouth College*
Mao Hu, *Duke University*

This research evaluates the relative merits of two established and two newly proposed methods for modeling impressions of social events: stepwise regression, ANOVA, Bayesian model averaging, and Bayesian model sampling. Models generated with each method are compared against a ground truth model to assess performance at variable selection and coefficient estimation. We also assess the theoretical impacts of different modeling choices. Results show that the ANOVA procedure has a significantly lower false discovery rate than stepwise regression, whereas Bayesian methods exhibit higher true positive rates and comparable false discovery rates to ANOVA. Bayesian methods also generate coefficient estimates with less bias and variance than either stepwise regression or ANOVA. Of the four methods, BMS strikes the best balance between sensitivity and specificity in variable selection, while also minimizing bias and variance in estimating coefficients. Methodological choices also have important implications for theory. We find that stepwise regression includes a large number of variables, many of which have no theoretical significance. ANOVA is far more parsimonious but excludes more theorized terms than BMS. While BMA includes more theory-driven effects than either BMS or ANOVA, it includes about twice as many atheoretical terms (though far fewer than the stepwise technique). We therefore recommend using BMS, or some other variant of MC3 BMA, for model specification in affect control theory. These methods perform well in variable selection, coefficient estimation, and the retention of theoretically important variables, while minimizing the inclusion of atheoretical terms. They also methods provide a means of formally leveraging the findings of past studies through the construction of informative priors.

Table 1. Summary of the Methods' Median Performance in Variable Selection and Coefficient Estimation Based on Ground Truth Data

Method	True positive rate	False positive rate	Bias	Variance
Stepwise	.86	.22	.08	.01
ANOVA	.43	0	.14	.02
BMA	.79	.02	.07	.01
BMS	.71	0	.07	.01

Table 2. Theorized and Atheoretical Coefficients Retained by Type

Proportion of effects retained	Stepwise	ANOVA	BMA	BMS
Theory-driven effects	.92	.66	.79	.71
Stability effects	1.00	1.00	1.00	1.00
Behavior effects	1.00	.67	.78	.78
Object diminishment	1.00	.00	1.00	1.00
Consistency effects	1.00	.78	.78	.56
Congruency effects	.75	.25	.75	.50
Balance effects	.67	.33	.50	.50
Atheoretical effects	.18	.05	.08	.04
Ratio of theorized to atheoretical effects	.36	1.00	.71	1.29

Note: Figures are based on the 1978 male data (Smith-Lovin and Heise 1978) and reflect the proportion of coefficients in each category that persisted with a given modeling approach relative to the maximum number of possible occurrences. The ratio of theorized to atheoretical effects is based on the raw number of effects in each broad category.

A New Direction in Identity Modification: Tangible Products as Modifiers of Identities

Rohan Lulham and Daniel B. Shank (equal authorship)

How does the affective impression of one's identity change by association with a tangible product? Is a salesclerk seen as better, more powerful, or more active if he or she drives a sports car? What about a clunker car? What about a delinquent? This research addresses all these questions by developing new ACT modifier equations for tangible consumer products – that is the created or processed objects that people may own, possess, and use in their everyday lives.

We build on our previous research which shows that consumer products are interpreted both symbolically and affectively (Lulham 2013, Shank and Lulham 2016a) and that they modify identities in ways consistent with the current ACT identity-modifier equations (Shank and Lulham 2016b). Following the research on role-identities being modified by dispositional traits, status characteristics, and emotions (Averett and Heise 1987, Heise and Thomas 1989, Smith, Matsuno and Ike 2001), we collected a preliminary study of 209 products and selected 52 that best covered the EPA space (7 of 8 EPA octants were covered; Table 1). We then crossed these in a 7x8 Latin square design with 58 identities, updating those used by Heise and Thomas (1989). The 52 products, 58 identities, and 212 combined product-identity were then rated in sets by 853 US Amazon mturk participants (96.7%, 825 usable). Most (98.9%) of the terms received 35+ ratings.

We directly compared this dataset to the Heise and Thomas (1989) emotion modification dataset. Combined modifier-identity EPA was primarily predicted by the base identities and their modifiers (R^2 = .79 to .85; Table 2: Model 2). Adding the dataset source, an identity by dataset interaction term, and a modifier by dataset interaction term added minimal additional explanatory power (ΔR^2 = .02 to .06; Table 2: Model 2 vs. 4). This provides strong support that the identity modification process is similar for either tangible products, emotions, or traits (Heise and Thomas have shown emotion and trait equations are similar).

Some interesting difference occur, however. Modifier equations from the regressions (Table 3) show that an identity's evaluation depends more on emotion evaluation than product evaluation (.67 vs. .40) and its potency depends more on emotion potency than produce potency (.60 vs. .30), but its activity is nearly equally dependent on emotion or product activity (.44 vs. .43). Therefore, people may assume more about someone's warmth and power from emotional displays compared to their possessions because emotions have a more direct tie to the person's disposition. Remarkably, possessions provide similar – although not as strong – impression signals as emotions. Emotions also show a potency-evaluation trade-off not present in products, whereby potent emotions lower one's evaluation (-.54; products -.16) and positive emotions make one seem less powerful (-.19; products .06).

Understanding that identity modification extends beyond social and dispositional characteristics to tangible objects greatly expands the identity modification potential in ACT. Our next steps are to examine all the differences and develop final product modifier equations using BayesACT. The ability to incorporate product modifiers into ACT will allow it to be applied to fields such as consumer science, fashion, design, marketing, advertising, human-computer interaction, and business.

Table 1: Products chosen for study by EPA octant.

EPA [+++] sports car, skates, basketball, race car, power tool, birthday cake, champagne, trophy, [++-] perfume, rowboat, security camera, umbrella, dictionary, a Sudoku, green tea, a safe, [+-+] French maid costume, pocket radio, cassette tape player, tricycle, [+--] VCR, bathroom towel, landline phone, slippers, crib, doll, yard gnome, baby blanket, [-++] gas-guzzler, slutty Halloween costume, chain saw, suicide vest, gun, noisemaker, mouse trap, steroids, [-+-] wall crucifix, lead painted toy, cockroach bait, cigarette, black lipstick, soured milk, gothic clothing, cigar, [--+] *none,* [---] totaled car, hospital gown, clunker car, flat basketball, broken computer, chewing tobacco, cremation urn, diet shake

Table 2: R-square (change in R-Square) for Hierarchical Linear Regression Models for Predicting the Combined Modified-Identity for Both Products and Emotions Datasets.

	Combined Modifier-Identity		
Model	Evaluation	Potency	Activity
1: Identities	.41	.56	.53
2: + Modifiers	.85 (.44)	.79 (.23)	.81 (.28)
3: + Dataset Dummy	.85 (.00)	.79 (.00)	.85 (.04)
4: + Identities X Dataset & Modifiers X Dataset	.87 (.02)	.81 (.02)	.87 (.02)

Note: Dataset dummy separates the products and emotions dataset.

Table 3: Coefficients Producing the Identity Modifier Equations for the Products and Emotions Datasets.

	Cons.	I_E	I_P	I_A	M_E	M_P	M_A	I_EM_E
C_E (products) =	-.54	.55	-.07	*-.04*	.40	-.16	*.00*	.09
C_E (emotions) =	-.40	.48	*-.02*	-.08	.67	-.54	.09	.12
C_P (products) =	-.08	-.05	.53	*.01*	.06	.30	.09	
C_P (emotions) =	-.21	-.05	.60	*.00*	-.19	.60	*.02*	
C_A (products) =	.37	-.05	*-.01*	.49	*.00*	*.04*	.43	
C_A (emotions) =	-.25	-.05	*.01*	.65	-.07	.10	.44	

Note: Lighter italicized coefficients are not significant at $p \leq .05$. The emotions equations are slightly different from Heise and Thomas (1989) due to different regression modeling.

References

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

Heise, David R. and Lisa Thomas. 1989. "Predicting Impressions Created by Combinations of Emotion and Social Identity." *Social Psychology Quarterly* 52(2):141-48.

Lulham, Rohan. 2013. "A Theory of Affective Experience." in *19th International Conference on Engineering Design (ICED13)*. Seoul, Korea.

Shank, Daniel B. and Rohan Lulham. 2016a. "Symbolic Interaction with Consumer Products: An Affect Control Theory Approach." *Sociology Compass* 10(7):613-22.

Shank, Daniel B. and Rohan Lulham. 2016b. "Products as Affective Modifiers of Identities." *Sociological Perspectives* 60(1):186-205. doi: 10.1177/0731121416629996.

Smith, Herman W, Takanori Matsuno and Shuuichirou Ike. 2001. "The Affective Basis of Attributional Processes among Japanese and Americans." *Social Psychology Quarterly*:180-94.

Affective Impressions of Groups versus Individuals in Interactions

Daniel B. Shank

Affective impressions are how good, powerful, and active people feel about an individual or a group, and these impressions routinely shift during social interactions. Affect control theory specifies equations based on empirical data that predict how the affective impressions of individuals change in social interaction, but no research has applied this theory to groups in interactions (e.g., Verizon cheats a student; the AARP lobbies Congress). I propose three studies – surveys with experimental conditions – to examine the differences in the affective impressions (Q1) between groups versus individuals and (Q2) between groups versus individual group members, in social interaction. I hypothesize that certain perceived properties of groups such as group entitativity (i.e., how much a group is perceived to be a single unit) and group mind will change the affective impression process for groups compared to individuals. These studies will provide initial evidence for groups' affective impression process and therefore will be a launching pad for an NSF grant proposal to develop predictive affective impression equations for groups in social interaction. Additionally, this research has a broad impact in that it will begin a major extension to affect control theory, bridge affective and cognitive perceptions in research on groups, and can be directly applied and tested in organizations, task groups, voluntary associations, families, and other types of groups. Therefore, this research and its applications will produce a better understand of the effects of social interactions on different types of groups, both their situational impressions and longer-term public image.

Recent Developments in Affect Control Theory

Neil J. MacKinnon, *University of Guelph*

This keynote address will discuss recent advances in ACT, updating the review Dawn Robinson and I presented at the 25th Anniversary of the Annual Conference of Theory and Research on Group Processes in 2013, published a year later (MacKinnon and Robinson 2014).

MacKinnon, Neil J. and Dawn T. Robinson. 2014. “Back to the Future: 25 Years of Research in Affect Control Theory”. *Advances in Group Processes* 31: 139-173.

Andreas Schneider, Texas Tech University

Complimentary Patterns of Dominance and Submission

Max Weber described authority, tradition and charisma as the three ways to establish dominance (*Herrschaft*). Taking a symbolic interactionist perspective, I argue that dominance is mutually established by the other engaging in submission.

Pattern of Submission Authority is reflected in an ideal-typical EPA pattern, which is potent, positively evaluated, and not expressive. "Because their power is legitimated by cultural rules, authorities are positively evaluated despite their ability to coerce. Because it is understood, authorities need not engage in expressive action to demonstrate their power (Schneider 2004)." While ideal-typical authority is described as a pattern of E+ P+ and A (neutral), the more general class of dominance is E+ P+ and A+. Defining submission as the inverse of dominance, I test if there is a pattern of E- P- A- that describes submission. If it holds true that higher-order patterns of affective meanings are complimentary, I not only identify another stabilizing structure in affective meanings, but a mechanism of complementation contributing to the stability of these structures.

Inverse Character of Submission Identities were rated on a 5-point ordinal scale reaching from definitely an authority to definitely not an authority. Listing identities with the highest authority rating and comparing them with the inverse that received negative authority ratings resulted in a list of identities that, if paired within their institutional setting, create partners of dominance and submission (see table 1).

Centrality of Power Correlations of EPA ratings with authority ratings indicate the centrality of the EPA dimensions in the definition of authority. The potency dimension correlates highest (0.80), the evaluation dimension less (0.31), and the activity dimension lowest (-0.13), but still significant. Investigating authority, power provides the most central explanation, followed by status. While expressivity has the lowest explanation power it is central in differentiating coercion, the expressive form of dominance, from the subtle form in which authorities exercise their power.

Cluster Analysis Revisiting a previous cluster solution that produced the authority cluster in the US 1978 and my German 1989 data I identified a cluster of submission. Conducting the same K-means six cluster analysis in the US data of 2003 and Schroeder's 2007 German data (see tables 2 and 3) reflects the hypothesized complimentary pattern of dominance and submission. In the US cluster solution, we see the authority with lower activity separated from dominance. Dominance and submission prove to be complementing central higher-order structures. Emerging in two cultures speaks for the generalizability of my findings. Identifying patterns of authority and submission in cluster solutions with older data in both cultures further supports the generalizability of these findings and speaks for the stability of cluster solutions.

Table 1: List of 5% of identities with the highest and lowest authority rating. Left column with highest authority ratings to lower ratings. Right column most negative to less negative ratings.

authority	beggar
boss	beginner
minister	doll
mother	newsboy
parent	nobody
policeman	peeping tom
principal	saphead
schoolteacher	scamp
scoutmaster	schoolboy
sheriff	schoolgirl
slavedriver	screwball
superior	servant
teacher	simpleton
tutor	sissy
airline pilot-	slave
attorney	subordinate
bodyguard	underdog
brute	vagrant
champion	applicant
construction foreman	apprentice

Table 2: Germany 2007 sex averaged cluster means

Affective Meaning	Cluster 1	Authority	Submission	Cluster 4	Cluster 5	Cluster 6
evaluation	0.27	1.77	-1.59	-2.62	1.52	-0.2
potency	1.8	1.03	-1.56	0.76	-1.01	0.26
activity	1.42	-0.14	-1.31	1.23	0.68	-0.1

Table 3: US Indiana 2003 sex averaged cluster means

Affective Meaning	Dominance	Authority	Cluster 3	Submission	Cluster 5	Cluster 6
evaluation	2.29	1.31	-2.38	-0.96	0.99	-1.1
potency	1.97	1.23	-0.5	-1.1	-0.11	0.54
activity	1.32	0.76	0.4	-0.87	0.36	1.16

Privilege and Social Action

Kimberly B. Rogers, *Dartmouth College*

This research explores the implications of affect control theory for understanding inequality. By measuring cultural sentiments on the dimensions of evaluation, potency, and activity, affect control theory offers a means of quantifying social perceptions of groups' relative status, power, and agency. The theory's impression change models allow us to use these sentiments to predict culturally expected behavior for particular groups in a wide range of interaction scenarios. I collected ratings of 28 gender, sexual, racial/ethnic, national, religious, and class identities on the dimensions of evaluation, potency, and activity, then used K-means cluster analysis to identify similarities in patterns of cultural sentiments across identity groups. After establishing the main cultural profiles characterizing groups' relative status and power, I simulated 178 interactions using affect control theory's models of impression change (Heise 2015). Simulations were run for all combinations of actors and object persons within each dimension of inequality (gender/sexual, racial/ethnic, national, religious, and class identities).

Heterosexual, cisgender, and white persons, Americans, Christians, and the rich were pulled into a single cluster, Cluster 1. Groups in this cluster were significantly higher in potency and lower in evaluation than all others in the study. Despite their substantial power advantage over others, these groups were the least respected in the study. Notably, they tended to be seen as benign rather than nefarious, with relatively neutral average evaluation ratings. Groups in Cluster 2 were the second highest in power, with average potency levels just above neutral. While significantly less powerful than groups in Cluster 1, these were the highest status groups in the study. Member groups included bisexual and queer persons, lesbians, Asian Americans, multi-racial persons and persons of color, international students, Africans, Buddhists, and Muslims. Despite their limited power relative to groups in Cluster 1, groups in Cluster 2 are well-respected, with higher status and power than groups in Clusters 3 and 4. Groups in Clusters 3 and 4 were comparable in status – significantly higher in evaluation than groups in Cluster 1 but significantly lower than those in Cluster 2. However, groups in Cluster 3 had average potency levels just below neutral, while those in Cluster 4 were seen as far more powerless – about as powerless as groups in Cluster 1 were powerful. Cluster 3 included gay, transgender, and gender-fluid persons, black, Latino/a, Asian, and Middle Eastern persons, atheists, and spiritual persons. Cluster 4 included Native Americans, immigrants, and the poor.

Simulation results reveal how cultural beliefs about groups' goodness and potency translate into inequalities in interaction. Powerful actors are expected to engage in dominant behavior, while those low in power are expected to act more submissively. Conversely, deferential acts are expected toward powerful object persons, and dominant acts toward objects lower in potency. Uniquely powerful acts are expected when especially privileged actors engage with especially disadvantaged object persons; uniquely submissive acts are expected when especially disadvantaged actors engage with especially privileged object persons. Simulations also revealed that high status actors are expected to behave more nicely than low status actors, and high status objects are expected to be treated more nicely than low status objects. Groups with a modest amount of power may be called upon to act even more nicely than groups lower in power, to signal that they do not pose a threat to more powerful actors.

In short, results suggest that disadvantaged actors are likely to have interactional experiences that limit their capability for powerful action and call on them to behave in nice, enthusiastic ways, even when they are on the receiving end of dominant behavior. When they fail to conform with these expectations, they risk breaching interactional norms, creating deflection, and receiving social sanctions from those working to bring the situation back in line with cultural meanings – to "put them back in their place." In contrast, privileged actors have opportunities to exercise power in social encounters without risk of violating social expectations. Our expectation of powerful actions from privileged but not disadvantaged actors tends to justify and encourage exactly the sorts of encounters that reinforce the social order.

Table 1: Pairwise Comparisons for the Evaluation, Potency, and Activity of Identity Sentiments by Cluster.

	Evaluation	Potency	Activity	Member Groups
Cluster 1	0.28[a]	1.63[a]	0.16[a]	cisgender, heterosexual, white, American, Christian, rich
Cluster 2	1.25[b]	0.50[b]	0.83[b]	lesbian, bisexual, queer, Asian American, person of color, multi-racial, international student, African, Buddhist, Muslim
Cluster 3	0.82[c]	-0.15[c]	0.39[a,b]	gay, transgender, gender-fluid, black, Latino/a, Asian, Middle Eastern, atheist, spiritual
Cluster 4	0.93[b,c]	-1.65[d]	0.54[a,b]	Native American, immigrant, poor

Note. Cells in a given column with different letters are significantly different.

Figure 1: Evaluation and Potency of Specific Identities by Cluster.

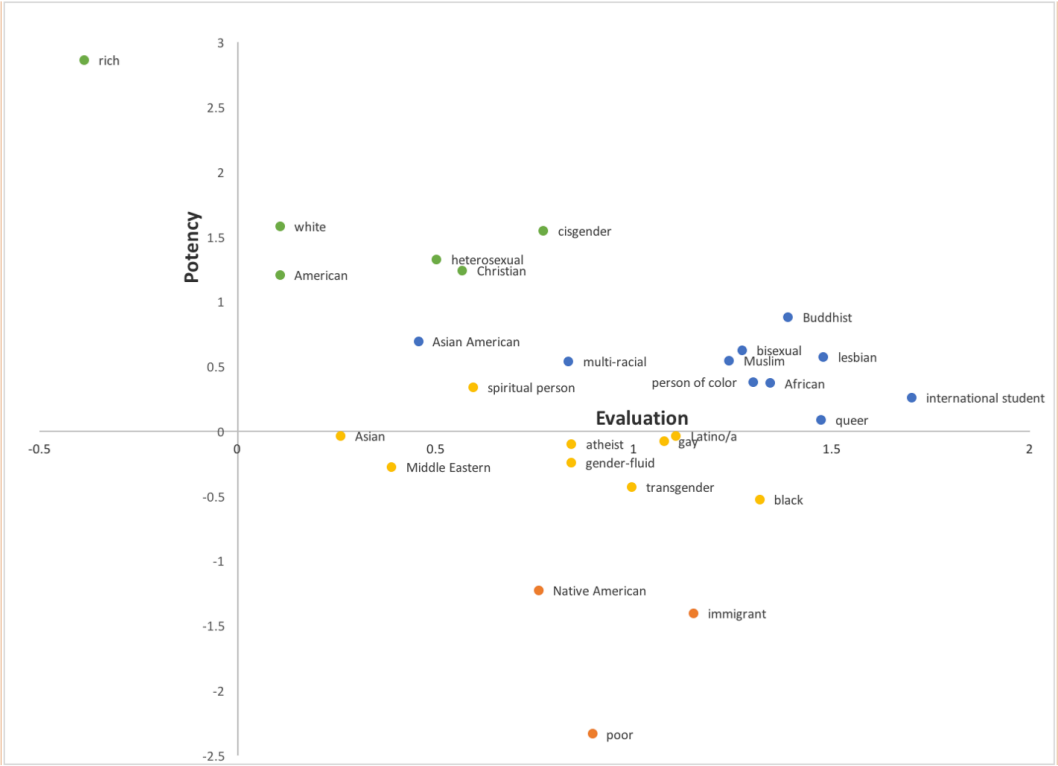


Table 3: Pairwise Comparisons for the Evaluation, Potency, and Activity of Behaviors by Actor Cluster.

	Evaluation	Potency	Activity
Cluster 1	0.46[a]	1.11[a]	0.11[a]
Cluster 2	1.10[b]	0.25[b]	0.81[b]
Cluster 3	0.81[c]	-0.21[c]	0.51[c]
Cluster 4	0.80[c]	-1.23[d]	0.79[b]

Note. Cells in a given column with different letters are significantly different.

The Structure of Deference: Modeling Occupational Status Using Affect Control Theory

Robert Freeland
Jesse Hoey

Weber ([1958]:187) defined status as a form of symbolic social power based on a "positive or negative, social estimation of honor." While it can rest on class situations, it "normally stands in sharp opposition to the pretensions of sheer property," implying that it is a multidimensional construct reflecting both class power and cultural esteem. Occupational prestige scores, the predominant method of operationalizing occupational status, has been criticized for reflecting class situation (education and income) not cultural perceptions of an occupation's esteem, goodness, and service to others. Newer paradigms employing either institutional or Neo-Marxist frameworks shifted the theoretical focus almost exclusively to the class component, conceptualizing status as either the symbolic reflection of the class order (Bourdieu 1984) or a signal of market quality (Podolny & Lynn 2013). We contend that these unidimensional approaches are inadequate for capturing the multidimensional structure of status and the emphasis on the class component is particular problematic because the cultural esteem component remains the primary component of the occupational status order despite the inability of prestige scores to adequately operationalize it.

To support our position, we develop and test a new multidimensional operationalization of occupational status that we call deference scores based on three universal dimensions of cultural meaning (evaluation, potency, and activity). Rooted in theoretical assertions that status can best be conceptualized as a network of deference relationships based on cultural beliefs, we use BayesACT to map this deference network by computing the likelihood that one occupation would "defer to" another for all possible combinations of over 300 occupational identities. Data come from the newly collected ACT dictionary, the General Social Survey, and Harris opinion polls.

Testing for construct validity, we find that deference scores significantly predicts the order of prestige found in public opinion polls while traditional prestige scores do not. And that in line with theoretical assertions, regressing the three affective dimensions on deference scores finds they are primarily determined by the evaluation dimension reflecting cultural perceptions of goodness and esteem with a standardized β coefficient of .76 with potency and activity having smaller yet still significant effects (β=.20, β=.19 respectively). To demonstrate criterion validity, using a series of binary logistic regression models, we find deference scores significantly predicts importantly workplace outcomes including attachment, general happiness, and importance of performing meaningful work net of controls. And for two outcomes, job satisfaction and feeling respect at work, deference scores had greater effects than either education or income.

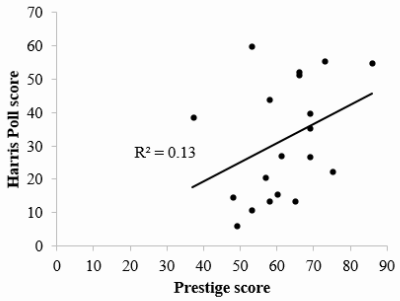


Figure 1. Prestige and Harris Poll score

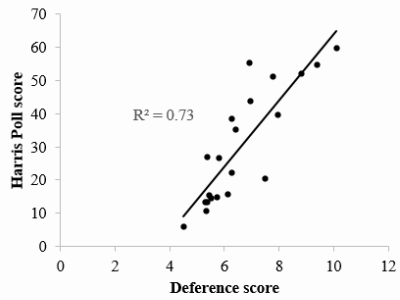


Figure 2. Deference and Harris Poll score

Table 1: Linear Regression Predicting Prestige Scores and Deference Scores

	Model 1	Model 2
	Prestige score	Deference score
	Beta (t)	Beta (t)
Evaluation	.12 (2.15) *	.76 (17.0) ***
Potency	.72 (13.1) ***	.20 (4.44) ***
Activity	-.30 (-5.50) ***	.19 (4.26) ***
R^2	.58	.71
N	186	186

* p < 0.05, **p < 0.01 ***p < 0.001

Table 2. Logistic Regression Models Predicting Workplace Attachment, Job Satisfaction, General Happiness, Meaningful Work, and Respect at Work

	Attachment	Job Satisfaction	Happiness	Meaningful Work	Respect
	Odds ratio (SE)	Odds ratio (SE)	Odds ratio (SE)	Odds ratio (SE)	Odds ratio (SE)
Deference	1.07 (0.025) **	1.21 (0.018) ***	1.09 (0.018) ***	1.18 (0.045) ***	1.17 (0.036) ***
Education	1.17 (0.027) ***	1.04 (0.020) *	1.10 (0.021) ***	1.83 (0.054) ***	1.08 (0.040) *
Income	0.86 (0.029) ***	1.15 (0.020) ***	1.15 (0.021) ***	0.96 (0.048)	1.06 (0.039)
Age	0.98 (0.002) ***	1.02 (0.001) ***	1.01 (0.001) ***	1.02 (0.003) ***	1.02 (0.003) ***
Female	0.72 (0.049) ***	1.05 (0.036)	1.06 (0.038)	1.39 (0.086) ***	1.08 (0.073)
Black	0.93 (0.070)	0.65 (0.053) ***	0.68 (0.058) ***	0.32 (0.144) ***	1.00 (0.103)
Other	1.30 (0.090) **	0.78 (0.064) ***	0.84 (0.068) *	0.42 (0.171) ***	0.96 (0.120)
-2LL	11,102.4	19,453.4	18,510.2	3,462.6	4,798.0
-2LL	11,162.5	19,677.4	18,656.8	3,672.4	4,837.1
N	8,891	14,146	14,588	2,706	3,557

Note: Standardized values for deference scores, education, and income measures were used in all models.
* p < 0.05, **p < 0.01 ***p < 0.001

SEX DIFFERENCES IN THE EFFECTS OF ROLE ATYPICALITY ON STATUS IN GROUPS

Status characteristics theory (SCT) explains how broader systems of inequality affect individuals by precipitating inequalities in groups. The source of group inequalities are salient status characteristics, which are attributes of individuals to which cultural beliefs confer differential levels of status. Thus far, the theory has not examined whether role atypicality, which is when individuals hold roles that are atypical for their state of a status characteristic, makes status characteristics salient. We use the conceptual and methodological tools of affect control theory to theorize about how role atypicality may make status characteristics salient and to design a laboratory experiment to test how role atypicality may make gender salient in task groups. We tested our hypotheses by designing a 10 condition experiment that modifies the standard experimental setting commonly used by SCT researchers to explain influence in groups. Results suggest that female participants are more likely to reject their female partner's influence when the partner possesses a male-typical than a female-typical role. Male participants are no more or less likely to reject their male partner's influence when the partner possesses a female-typical as opposed to a male-typical role.

Modeling Social Interaction: New Directions in Affect Control Theory Extended Abstract

CONCEPTIONS OF STATUS AND PERCEPTIONS OF CRIME

Marshall R. Schmidt
Department of Sociology
University of Oklahoma

The sentencing literature shows that criminal sentences for the same or similar offenses vary by extra-legal offender characteristics, like age, race, citizenship status, education, occupation, socioeconomic status, and others (e.g., Albonetti 1997, 1999; Bontrager, Bales, and Chiricos 2005; Brennan 2006; Bridges and Steen 1998; Demuth and Steffensmeier 2004; Johnson 2003, 2005; Johnson, Ulmer, and Kramer 2008; Light, Massoglia, and King 2014; Kramer and Steffensmeier 1993; Kramer and Ulmer 2002; Spohn and Holleran 2000; Steen, Engen, and Gainey 2005; Steffensmeier and Demuth 2000; Ulmer 1997; van Wingerden, Wilsem, and Johnson 2014;Warren, Chiricos, and Bales 2012; Wheeler, Weisburd, and Bode 1982; Wooldredge 2010). Theoretical work on offender characteristics and sentencing explains that offender characteristics shape sentencing recommendations and outcomes because of how certain offender characteristics are more closely linked to stereotyped perceptions of criminality (Albonetti 1991; Steffensmeier, Ulmer and Kramer 1998). For instance, research consistently shows that young black and Hispanic males face stiffer penalties than other offenders who commit the same or similar offenses (Steffensmeier and Demuth 2000; Warren, Chiricos and Bales 2012).

Although certain extra-legal factors, such as race and age, consistently affect sentencing in the same way, with racial minorities and younger individuals consistently punished more harshly than whites and older offenders (Steffensmeier and Demuth 2000; Warren, Chiricos and Bales 2012), other offender characteristics do not consistently affect sentencing outcomes. For instance, both occupation and gender affect sentencing outcomes, but empirical patterns do not consistently show how these offender attributes affect sentencing outcomes. Furthermore, theoretical explanations for why extra-legal factors affect sentencing outcomes do not clearly explain why or how all offender characteristics impact sentencing outcomes, even though the theories are designed to do so.

I use affect control theory and status characteristics theory to clarify the judicial processes that may result in differential treatment for criminal offenders. Affect control theory and status characteristics theory both account for how cultural understandings of offender attributes shape expectations and outcomes in social situations. Affect control theory (ACT) asserts that all elements of a situation have affective meanings tied to them that shape observers' impressions of an event (Heise 1979, 2007; Mackinnon 1994). Similarly, status characteristics theory (SCT) connects culturally specific beliefs about social categories to an individual's own and others' expectations of behavior and performance, including perceptions of competency, intelligence, and morality (Berger, Cohen, and Zelditch 1972; Berger, Rosenholtz, and Zelditch 1980; Berger and Webster 2006; Humphreys and Berger 1981). Using these two theories as theoretical frameworks allows me to generate and test specific hypotheses for how occupation, gender, and the word used to describe a crime affect sentencing. Although the theories both account for how cultural considerations of offender characteristics are likely to shape sentencing outcomes they offer different predictions for the same processes and I test these competing hypotheses. I use vignette experiments that allow me to test the independent effects of occupational status, crime description, and gender on sentencing outcomes. And, I collect data from both a convenience sample of college students and an online quota sample of Mechanical Turk users. In doing so this research addresses gaps in the literature on perceptions and criminal sentencing, and it provides an opportunity to further apply, test, and refine two major theories from the social psychology literature, which should also better explain the underlying judicial processes that shape sentencing outcomes than theories from the sentencing literature.

The Role of Gendered Identities in Impression Formation

Jonathan H. Morgan, *Duke University*

Gender is a defining aspect of social interaction. Through social interaction, gender inequalities emerge and are reinforced. For example, labeling social actors using gendered identities influences how people are evaluated and rewarded. Understanding the social psychological mechanisms underlying how gender labeling influences our perceptions of others remains an active area of research. Past work in affect control theory has sought to explain the effect of gender as an ongoing affective process where cultural meanings about the goodness, potency, and activity of identities and behaviors combine to form an impression that then is updated as new events occur. In this view, the effect of being labeled with a gendered identity on our impressions of others is a function of the identity's affective meanings in concert with the other meanings defining the interaction. Work examining the role of gender labeling within status hierarchies, however, suggests that gendered identities are likely to contribute institutional information above and beyond these affective meanings that can further specify how cultural meanings combine to influence our impressions. To examine the extent to which gendered identities influence our impressions, I analyze the largest impression change data set collected to date and compare the results with data collected in separate study in 2010. I estimate and compare impression change models using a general linear modeling framework. I find that gender encoding has a direct effect on our impressions of others, but that affective meanings mediate these effects. I also find that that gender labeling interacts with affective cultural meanings in important ways. In summary, I find that gender labeling influences our impression of others, particularly our impressions of individuals who are the object of social acts.

Table 1. Oe' Gender Encoded Identities Model

	Model 1	**Model 2**	**Model 3**
Gender Encoded Identities (Actor)			
Female	-0.07		-0.08*
	(0.08)		(0.03)
Male	0.08		-0.07*
	(0.09)		(0.04)
Gender Encoded Identities (Object)			
Female	0.61***		0.15***
	(0.09)		(0.03)
Male	-0.05		-0.09*
	(0.1)		(0.04)
Ae		0.01	0.03**
		(0.01)	(0.01)
Ap		0.02*	0.02*
		(0.01)	(0.01)
Aa		-0.01	-0.00
		(0.01)	(0.01)
Be		0.11***	0.11***
		(0.01)	(0.01)
Bp		-0.03†	-0.03†
		(0.02)	(0.01)
Ba		-0.00	-0.01
		(0.01)	(0.01)
Oe		0.59***	0.58***
		(0.01)	(0.01)
Op		-0.02†	-0.00
		(0.01)	(0.01)
Oa		-0.00	0.00
		(0.01)	(0.01)
AeBe		0.03***	0.03***
		(0.00)	(0.00)
BeOe		0.04***	0.04***
		(0.00)	(0.00)
AeBeOe		0.01***	0.01***
		(0.00)	(0.00)
Female		0.22***	0.22***
		(0.03)	(0.02)
Constant	-0.2***	-0.06	-0.05†
	(0.05)	(0.03)	(0.03)
Goodness of Fit			
AIC	3024.68	1065.71	1035.22
BIC	3054.30	1139.76	1129.03

Note: Non-Encoded identities are the reference category. Smaller AIC and BIC scores indicate better fit. †$p<0.1$; *$p<0.05$; **$p<0.01$; ***$p<0.001$

Bridging the Gender Wage Gap: A Multidimensional Model of Occupational Gender Stratification

Robert Freeland
Catherine Harnois

Why do occupations employing more women pay less on average than occupations with more men? Two main explanations for the persistence of occupational wage inequality presently dominate the debate: human capital theory and devaluation theory. Human capital theory (Becker 1985; Polachek 1981; Tam 1997) argues that occupational wages are driven by market forces especially differential investments in human capital (e.g., education, training, tenure). From this perspective, occupational wage differences occur because women are concentrated into occupations requiring lower levels of human capital investment. Devaluation theory (Acker 1989; England 1992; 2010; Reskin and Maroto 2011) counters that in addition to market forces, female-domination occupations are culturally devalued *because* they involve traits associated with women, finding that the proportion of women in an occupation is negatively associated with mean occupational wages net of human capital controls.

Central to this debate is the role of gendered cultural meanings. Devaluation scholars theorize that they have a direct negative effect on wages while human capital scholars contend that that have no direct wage-setting effect. We argue that because the workplace is embedded within a larger gendered social system, a broader, more comprehensive conceptualization of cultural sentiments is required to bridge these two perspectives. We build on Risman's (2004) theory of "gender as a social structure," that conceptualizes this structure as three distinct yet interlocking levels – individual, interactional, and institution. We contend that gendered cultural sentiments operate within and link levels by providing cultural knowledge used to enact this structure.

In contrast to current unidimensional approaches focused on the direct negative effect of feminine evaluative traits (goodness, caring, warmth), we contend that sentiments are a multidimensional construct consisting of evaluation (goodness), potency (power), and activity (liveliness) and that these dimensions must be considered in concert because it is the conflation of these dimensions that create wage differentials. Specifically, occupations with higher concentrations of women are high in evaluation but low in potency with only the potency having a direct, positive effect on wages. This suggests that cultural sentiments do influence wages but not in the simple and direct manner currently theorized.

To test and support our theory we combine, and then analyze, data from three different sources: the 2011 American Community Survey (ACS), the U.S. Department of Labor's Occupational Network (O*NET), and a newly collected dictionary of affective meaning. Our results find that women are over-represented in occupations that score high on evaluation, while men are over-represented in occupations that score high on activity and potency as shown in Table 1. Figures 1-3 show the strong positive association between potency and wages. Table 2 shows the results from a series of Hierarchical Linear Regression models demonstrating that cultural beliefs about an occupations' potency (associated with masculinity) has a significant positive effect on occupational wages, net of human capital characteristics while evaluation (associated with femininity) has no direct effect. Gendered cultural meanings thus drive occupational segregation and contribute to occupational wage inequality.

Table 1: Descriptive Statistics for the 20 Occupations with the Highest and Lowest Percentage of Female Workers

	Evaluation	Potency	Activity	Income	College degree
Highest % female	1.77	0.49	0.05	$25,523	31%
Lowest % female	1.23	0.82	0.76	$37,581	8%
Difference	0.53	-0.33	-0.71	-$12,058	23%

Notes: Mean income; college degree = percent of workers with college degree; excludes occupations comprising less than 0.1% of workers

Figures 1-3

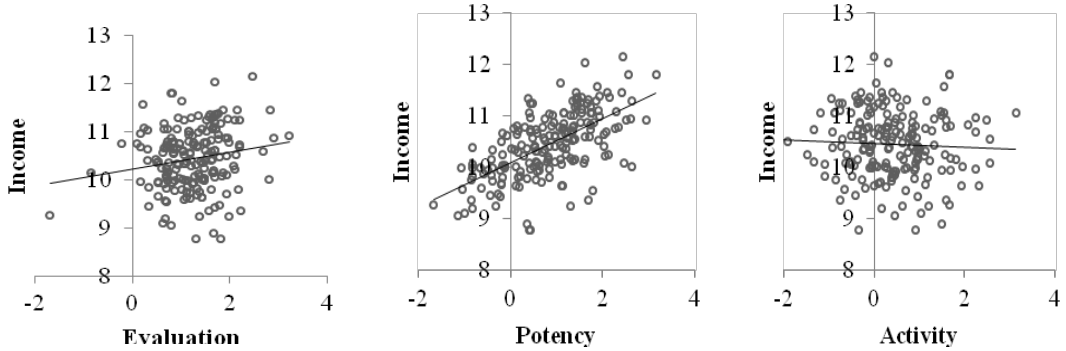


Table 2: Occupation-level Coefficients for Hierarchical Linear Regression Predicting Income

	Model 1	Model 2	Model 3	Model 4
	Gender	Complexity	EPA	Full
	Coeff (s.e.)	Coeff (s.e.)	Coeff (s.e.)	Coeff (s.e.)
Percent female	.273 (.094) **	-.026 (.082)	-.001 (.067)	-.001 (.083)
Complex problem solving		.310 (.054) ***		.226 (.053) **
Vocational preparation		.083 (.025) ***		.072 (.025) **
Service orientation		.043 (.038)		.044 (.037)
Physical		-.025 (.020)		-.029 (.019)
Hazardous		.042 (.023)		.049 (.023) *
Evaluation			-.029 (.031)	-.007 (.023)
Potency			.234 (.022) **	.055 (.021) *
Activity			-.076 (.022) **	-.007 (.017)

The Gender Gap in Business Leadership: Exploring an Affect Control Theory Explanation

Amy Kroska and Trent C. Cason
University of Oklahoma

We use affect control theory and its computer simulation program, *Interact*, to theoretically model the interactional dynamics that female and male business executives are likely to face in the workplace and show how these dynamics are likely to contribute to the gender gap in business leadership. Using several analysis strategies and data from 520 simulated events, we find that female executives face a wider range of executive-normative situations that require gender deviance than do male executives, and many of the deviance-inducing events are likely to be unavoidable as a business executive (e.g., confronting an unreliable employee, directing a foolish manager, selling something to an opponent). We also show that a female executive's performance of these gender-deviant actions is likely to elicit highly negative attributions (e.g., ruthless, sadistic, scornful, intolerant), giving the female executives identities with affective meanings that are further from the affective meaning of "an executive" than those likely to be given to gender-deviant male executives. Together these patterns suggest that female executives have less latitude than do male executives in the types of workplace behaviors they can enact without violating gender norms, constraints that are likely to make the path to business leadership more difficult for women. We show how our approach can be used to conceptualize components of the doing gender and other "doing" perspectives, and we discuss how it can be used to theorize about interactional processes underlying other inequalities, including those based on race, class, and age.

Table 1. Evaluation-Potency-Activity Profiles of Female and Male Business Leadership Identities

	Female Dictionary			Male Dictionary		
	Evaluation	Potency	Activity	Evaluation	Potency	Activity
Gender Modified Identities						
Female executive	**2.15**	2.10	**1.73**	**1.06**	.46	.77
Male executive	.13	**2.66**	1.71	.98	**2.08**	**1.55**
Female manager	**1.68**	1.82	**1.83**	**.90**	.25	.72
Male manager	-.18	**2.38**	1.81	.79	**1.86**	**1.50**
Gendered Identities [a]						
Manageress	**1.44†**	1.32	1.59	**1.22**	1.23	.43
Manager	.83	**2.26***	**1.74**	.98	**1.57**	**1.34***
Businesswoman	**2.46****	**2.25**	2.02	1.23	.95	.77
Businessman	1.37	1.96	**1.63**	**1.50**	**2.00***	**1.66***

Notes: Data come from the 2001-03 U.S. *Interact* dictionaries (Francis and Heise 2006). Bolding highlights the higher value in each set. [a] t-tests assess differences between the corresponding dimensions within each pair of gendered identities. N for manageress in female dictionary = 28, in male dictionary = 20; N for manager in female dictionary = 29, in male dictionary = 35; N for businesswoman in female dictionary = 41, in male dictionary = 26; N for businessman in female dictionary = 34, in male dictionary = 41; significance is marked on the larger value, with † $p < .10$; * $p < .05$; ** $p < .01$ (two-tailed tests). t-tests could not be performed on the gender modified identities.

Table 2. Gender-Deviant Events and Actor Redefinitions in the Executive-Normative Sample in the Female Dictionary (N = 130)

		Event		Actor Redefinitions that Reduce Deflection after the Event:		Euclidean Distance from EPA of Executive (1.38, 2.75, 1.62) for:	
Gender Deviant for **Females**:	N (%)	Behavior	Object	Additional Attribute	New Attribute	Female/Male Executive with Additional Attribute	Executive with New Attribute
female - male deflection ≥ .5	90 (69%)	(-1.07, .91, .71) chide, sue, punish	(.51, .56, .78) merchant, union member, protégé	(-1.97, -.71, -.27) petty, immoral, sadistic	(-2.04, -1.32, -.07) careless, selfish, grouchy	3.16	3.20
female - male deflection > 1.5	70 (54%)	(-1.43, .94, .69) bawl-out, defy, chide	(.60, .37, .77) union member, server, laborer	(-2.25, -.67, -.25) sadistic, scornful, spiteful	(-2.34, -1.29, -.05) scornful, intolerant, careless	3.31	3.35
female - male deflection > 4	31 (24%)	(-2.00, .90, .71) defy, browbeat, bribe	(1.16, .19, .84) shop clerk, laborer, union member	(-2.76, -.72, -.12) intolerant, unfair, scornful	(-2.92, -1.37, .08) intolerant, scornful, unfriendly	3.60	3.68
female - male deflection > 8	4 (3%)	(-2.00, 2.00, 1.00) coerce, boss around, fire_ from a job	(2.00, .00, 1.00) employee, assistant, traveler	(-2.57, .81, .44) vengeful, [cruel, shrewd]	(-2.71, .17, .64) rude, egotistical, vengeful	3.21	3.36
Gender Deviant for **Males:**							
female - male deflection ≤ -.5	32 (25%)	(2.00, .88, .88) beam at, lunch with, answer	(1.00, .63, .88) merchant, protégé, saleslady	(3.62, -.41, -.24)	(2.09, -.89, -.13) [obedient]	1.82	1.93
female - male deflection < -1.5	8 (6%)	(2.00, .00, 1.00) chitchat with, lunch with, [serve]	(2.00, 1.00, 1.00) customer, vacationer, worker	(4.20, -1.50, .06)	(2.56, -2.01, .16)	2.53	2.21

Notes: Simulations come from the business institution of the 2001-03 U.S. female *Interact* dictionary (Francis and Heise 2006). The EPA scores in the Behavior and Object columns are the average EPA value for behaviors and objects at that level of gender-deviance. The unbracketed concepts are within a Euclidean distance of 1 from the EPA profile in that cell, those in straight brackets [] have a distance greater than 1.0 but less than 1.25, and those in curved brackets {} have a distance greater than 1.25 but less than 1.50.

Table 3. Gender-Deviant Events and Actor Redefinitions in the Executive-Normative Sample in the Male Dictionary (N = 130)

		Event		Actor Redefinitions that Reduce Deflection after the Event:		Euclidean Distance from EPA of Executive (1.26, 1.93, 1.44) for:	
Gender Deviant for **Females**:	N (%)	Behavior	Object	Additional Attribute	New Attribute	Female/Male Executive with Additional Attribute	Executive with New Attribute
female - male deflection ≥ .5	28 (22%)	(-1.36, 2.00, 1.36) scold, [boss around, chew out]	(.79, .64, .86) merchant, consultant, purchaser	(-1.32, 2.21, 1.68) {authoritarian}	(-2.02, .64, 1.09) ruthless, quarrelsome, hotheaded	2.60	2.70
female - male deflection > .75	12 (9%)	(-2.00, 2.00, 1.67) boss around, coerce, yell at	(.83, .50, .83) union member, protégé, merchant	(-1.91, 2.10, 2.13)	(-2.60, .53, 1.54) violent, ruthless, [hotheaded]	3.01	3.16
female - male deflection > 1	5 (4%)	(-2.00, 2.00, 2.00) [chew out], {scold, shout at}	(1.60, .40, .80) worker, traveler, assistant	(-2.20, 2.07, 2.46)	(-2.88, .51, 1.86) abusive, violent, {ruthless}	3.25	3.40
Gender Deviant for **Males**:							
female - male deflection ≤ -.5	49 (38%)	(.29, .00, .24) beckon to, extol, request something from	(.41, .61, .78) superordinate, union member, strike breaker	(-1.20, -2.30, -.81) gullible, unpopular, [thoughtless]	(-1.26, -2.17, -.70) gullible, thoughtless, unpopular	2.58	2.62
female - male deflection < -.75	29 (22%)	(1.31, .00, .62) concur with, show something to, pay for	(.41, .62, .76) superordinate, union member, strike breaker	(.21, -1.96, -.25) {dependent, soft-spoken}	(.08, -1.85, -.14) {dependent, inhibited, submissive}	1.92	1.98
female - male deflection < -1	10 (8%)	(2.00, .00, .00) answer, show something to, confer with	(.60, .60, .80) union member, superordinate, strike breaker	(1.64, -1.68, -1.38)	(1.45, -1.59, -1.27) {soft-spoken, cautious}	1.93	2.01

Notes: Simulations come from the business institution of the 2001-03 U.S. male *Interact* dictionary (Francis and Heise 2006). The EPA scores in the Behavior and Object columns are the average EPA value for behaviors and objects at that level of gender-deviance. The unbracketed concepts are within a Euclidean distance of 1 from the EPA profile in that cell, those in straight brackets [] have a distance greater than 1.0 but less than 1.25, and those in curved brackets {} have a distance greater than 1.25 but less than 1.50.

Table 4. Behavior Differences and Deflection Scores for Female and Male Executives Interacting with Various Workplace Objects using the Female Dictionary

Behaviors	Object	Actor-based Deflection for:		Female - Male Deflection	Doing Gender for:[a]	Difference in EPA of Behavior:
		Female Executive	Male Executive			
(1.84, 1.55, 1.76) drink to, chat up, warn	employee (1.88, .05, .84)	.30	1.33	-1.03	female	(1.10, -.31, .28)
(.74, 1.86, 1.48) urge on, challenge, bargain with		1.05	.38	.67	male	
(1.68, .68, 1.33) chitchat with, chat up, chatter to	manager (.83, 2.26, 1.74)	.93	1.63	-.70	female	(1.16, -.24, -.17)
(.52, .92, 1.50) jest with, upbraid, bargain with		1.37	.85	.52	male	
(1.62, .98, 1.29) collaborate with, chat up, beam at	competitor (.69, 1.65, 1.78)	.82	1.38	-.56	female	(1.22, -.31, -.16)
(.40, 1.29, 1.45) bargain with, stop, discipline		1.50	.64	.86	male	
(2.04, .45, 1.73) chitchat with, drink with, chat up	VIP (1.79, 2.79, 1.87)	.90	2.28	-1.38	female	(1.11, -.09, .06)
(.93, .54, 1.67) chatter to, drink with, jest with		.96	1.21	-.25	gender-neutral	
(.92, 1.53, .98) direct, sell something to, bargain with	opponent (-.54, .79, 1.32)	1.31	.76	.55	male	(1.08, -.37, -.43)
(-.16, 1.90, 1.41) discipline, command, penalize		2.11	.42	1.69	male	
(.43, 2.09, .90) confront, bargain with, discipline	unreliable employee (-1.57, -.40, -.36)	1.72	.45	1.27	male	(.92, -.28, -.56)
(-.49, 2.37, 1.46) penalize		2.46	.30	2.16	male	
(.69, 1.52, .96) bargain with, direct, sell something to	foolish manager (-.84, .93, 1.22)	1.49	.71	.78	male	(.91, -.33, -.49)
(-.22, 1.85, 1.45) command, discipline, penalize		2.05	.43	1.62	male	

Notes: Simulation results come from the business institution of the 2001-03 U.S. female *Interact* dictionary (Francis and Heise 2006). The EPA profiles in the Behaviors columns create the least total deflection for a female executive (first profile) or a male executive (second profile) directing an action at the object in that row. [a] Events do gender for females when the actor-based deflection difference (female - male) $\leq$ -.5 and actor-based deflection < 2; events do gender for males when the actor-based deflection difference (female - male) $\geq$ .5 and actor deflection < 2. Events that do gender for one gender are gender-deviant for the other gender.

Table 5. Behavior Differences and Deflection Scores for Female and Male Executives Interacting with Various Workplace Objects using the Male Dictionary

Behaviors	Object	Actor-based Deflection for:		Deflection Difference	Doing Gender for:[a]	Difference in EPA of Behavior
		Female Executive	Male Executive			
(1.24, .24, .49) concur with, show something to, pay for	employee (1.16, .48, .66)	.05	.88	-.83	female	(-.08, -1.29, -.48)
(1.32, 1.53, .97) supervise, join up with, talk to		.17	.29	-.12	gender-neutral	
(1.24, .03, .46) concur with, pay for, show something to	manager (.98, 1.57, 1.34)	.10	1.03	-.93	female	(-.06, -1.14, -.48)
(1.30, 1.17, .94) barter with, supervise, talk to		.09	.42	-.33	gender-neutral	
(1.32, .01, .53) concur with, show something to, pay for	competitor (1.26, 1.66, 1.57)	.08	1.01	-.93	female	(-.09, -1.14, -.48)
(1.41, 1.15, 1.01) barter with, talk to, supervise		.06	.39	-.33	gender-neutral	
(1.38, -.15, .55) concur with, show something to, pay for	VIP (1.30, 2.25, 1.33)	.12	1.12	-1.00	female	(-.10, -1.04, -.48)
(1.48, .89, 1.03) place order with, speak to, barter with		.02	.49	-.47	gender-neutral	
(.66, .44, .19) pay for, tell something to, turn to	opponent (-.46, .24, 1.01)	.43	1.20	-.77	female	(.09, -1.37, -.52)
(.57, 1.81, .71) discipline, confront, exalt		.71	.67	.04	gender-neutral	
(.39, .55, .13) prompt, cue, dissuade	unreliable employee (-1.15, -.07, -.32)	.65	1.37	-.72	female	(.13, -1.42, -.57)
(.26, 1.97, .70) discipline, confront, urge on		.96	.81	.15	gender-neutral	
(.59, .37, .18) turn to, pay for, tell something to	foolish manager (-.64, .63, .81)	.47	1.28	-.81	female	(.10, -1.32. -.54)
(.49, 1.69, .72) discipline, confront, train		.69	.72	-.03	gender-neutral	

Notes: Simulation results come from the business institution of the 2001-03 U.S. male *Interact* dictionary (Francis and Heise 2006). The EPA profiles in the Behaviors columns create the least total deflection for a female executive (first profile) or a male executive (second profile) directing an action at the object in that row. [a] Events do gender for females when the actor-based deflection difference (female - male) $\leq$ -.5 and actor-based deflection < 2; events do gender for males when the actor-based deflection difference (female - male) $\geq$ .5 and actor deflection < 2. Events that do gender for one gender are gender-deviant for the other gender.

Modeling Voter Ideology and Responses toward Public Policies using Affect Control Theory

Celeste Campos-Castillo and stef shuster

How does the public come to buy into a policy? This is a long-standing issue that remains relevant at state- and national-levels. For decades, scholars of social movement theories have suggested that the social problems that the policy addresses should be framed in a manner that attends to ideologies held by members of the public, but this interplay is rarely modeled

Specifically, we developed a methodological approach that uses the mathematical tenets of affect control theory to model 1) how voters interpret frames of social problems and policies; and 2) how interpretation varies based on voter ideology. The first demonstration of our approach explained why the Iowa Equal Rights Amendment (ERA), despite having bipartisan support, failed to pass voter referendum in 1980. The Iowa ERA, and other amendments like it, was proposed to address gender inequality. We identified two gender ideologies (feminist and conservative family values) that were salient at the time of the referendum, and used Interact to model how voters adopting each ideology may interpret different frames about the amendment. The Interact simulations suggested that frames that depict how a public policy conflicts with ideology are more successful at mobilizing than frames that depict how it confirms ideology. Because proponents of the Iowa ERA tended to use the latter approach, while opponents used the former approach, the simulations offer one explanation for why the amendment failed.

We are planning two more empirical demonstrations that build on this method. First, we will model poll data collected after all three 2016 Presidential Debates by taking into account the frames used by each candidate to depict their proposed policies and voter ideology. Second, we will model public interest in recently passed Death with Dignity Acts that legalize physician-assisted death by comparing frames for and against the policies and differing ideologies about end-of-life care.

Deflection in the 2016 Election: Gender, Perceptions, and Voting Intentions

Kaitlin M. Boyle and Chase B. Meyer

Women are unequally represented in American electoral politics at multiple levels, including at its highest levels in Washington, D.C. Political scientists offer various explanations for this under-representation, including the fact that women are less likely to be recruited or told to run for political office. The 2016 Presidential election is unique in that it is the first Presidential election in the United States where a woman won the candidacy for a major political party. Hillary Clinton faced a man, Donald Trump, in the race to the White House. While noting that these individuals are demographically similar in a number of ways—race, class, sexual orientation—their difference in gender provides a unique opportunity to explore some of the mechanisms that prevent women from breaking the highest of glass ceilings.

THEORY. Sociology also offers a number of lenses through which we can view gender inequality in organizations, institutions, and leadership. Research has highlighted structural, cultural, and social psychological factors that bar women from earning equal pay, entering high status occupations, and promotion. Affect control theory, in particular, provides a multi-level approach to understanding one reason why Clinton—and other women seeking high status, powerful positions in the United States—seemed to face unique, gender-based challenges that male counterparts are less vulnerable to. Primarily, does Hillary Clinton have the "stamina" for the job, or the "presidential look?" Trump's quotes about Clinton are identity-based attacks on her ability to lead based on her strength and liveliness—she is also, according to Trump, a "bad, bad person."

THE CURRENT STUDY. For affect control theorists, these quotes may evoke considerations of the evaluation, potency, and activity profiles for "President," "woman," and "man"—how they diverge and how deflection may affect voting patterns. Furthermore, given deep regional and demographic differences in voting patterns, we also explore factors that may influence EPA ratings of these identities and voting intentions in a nationally-representative sample of 1,400 participants in an online MTurk study conducted in October 2016.

HYPOTHESES AND RESULTS. We hypothesized (H1) that "man" will be closer than "woman" to "President" in EPA space—essentially, expecting that a female taking on the role of the President would be more deflecting than a male taking on that role. We also hypothesized (H2) that *woman-President deflection* would affect whether participants intended to vote for Clinton in the 2016 election. Both hypotheses are supported while controlling for participants' demographic characteristics, party affiliation, and political ideology. Furthermore, we explore factors that influence *woman-President deflection*, and thus, voting intentions. We predicted *woman-President deflection* using a number of state-level indicators of women's status and political power. We find that participants living in states where women hold more political offices (and in the Senate in particular) find a woman President less deflecting (H3), and they are more likely to indicate support for Clinton (H4). *Woman-President deflection* partially mediates the effect of the number of women Senators on participants' inclination to vote for Clinton.

CONCLUSION. Participants are more likely to find a woman President deflecting if they live in states where women hold fewer political offices; in turn, they are less likely to indicate they would vote for Clinton. This effect persists while controlling for important factors that influence voting behavior, and woman-President deflection is actually *more predictive* of voting than participants' gender or age. This study highlights how structural barriers to equality in important institutions (in this case, the political arena), translate into sentiments about women leaders that decrease their likelihood of being elected, furthering still the problem of under-representation.

Abstracts

Friday, June 23

Affect Control Theory as a Qualitative Analysis Schema

Linda E. Francis, Cleveland State University

Kathryn J. Lively, Dartmouth College

Affect Control Theory has long been recognized as an insightful theory using equation-based predictions and simulations. However, the propositions and dimensions of ACT can also be used as a means of coding unstructured data within a wide variety of qualitative methodologies, including participant-observation, documentary, and interview studies. It is also amenable to combination with grounded theory, ethnography, and mixed method approaches, largely because it is not a philosophy of analysis so much as it is a powerful tool for coding interaction. It is, in that sense, not a "coding scheme" in the traditional qualitative sense of the organization of codes in a particular study, but rather a "schema," which is a way of approaching analysis more generally.

In recognition of its growing role in qualitative work, this presentation will make a first attempt to formally codify and describe the use of the ACT dimensions and concepts in qualitative analysis. In brief, this process entails working backwards from the manifest situation (the equivalent of the simulation result in quantitative work). As Lively and Heise (2013) point out, "the relations between identity, impression, and emotion allow any one of these to be inferred, given the other two" (p. 52). The key endeavor involves identifying the event being observed, and then the actor(s), behavior(s) and object(s) (ABOs) in that event. Both the event and the identities being enacted may not be immediately obvious and often require careful evaluation. Once identified, each ABO can then be assessed for EPA dimensions, though numeric values cannot be assigned. In ethnographic or other research involving ongoing interaction, the entire event can also be analyzed for change over time, processes of negotiation, and evidence of deflections (as seen in actors' reactions). The results of the analysis should produce insights into how actors define the situation such that it calls forth the actions and emotions evinced.

This presentation will draw from semi-structured interviews of elders with dementia and their primary caregivers. Researchers conducted these interviews with a combination residents of a nursing home and an assisted living facility, participants in a low-cost Alzheimer's day program, and guests at a community senior citizens' center. Such diverse sources of data permitted interviews with people at wide-ranging levels of impairment. The 26 interviews with elders were 20-90 minutes in length, and the 21 interviews with caregivers were 40-90 minutes in length. Interviews were audio-recorded and transcribed verbatim, then uploaded into a qualitative text-analysis software program for coding. Sample interview excerpts are shown, with EPA coding, on the next page. As will be evident, qualitative applications of ACT produce contrasting but complementary contributions to the quantitative use of the theory. Moreover, ACT as a qualitative analysis schema has potential for any study of human interaction.

Sample Analysis

Daryl: I worked in many different places because I just loved the job, you know. I'd do it so much when I got to the top, then I'd move over and get the job here, and get the job there. See I had my wife died, before that 6 years ago... there an accident and stuff like that so I was all alone. So…I still have a big home that I own but I stay here and work here all the time with the people and I am pleased with it. I got to the place where I started here, was be nice to the people, that's what I had. ...I really enjoy it. Even now. With the people, with the girls and stuff like that. Just talk to them and all about, you know, nothing. Tell them what they have to do and you stand up to their standards and have no trouble.

I: so, have you been here for 6 years then, since your wife died?

Daryl: no, I was here, I have only been here 8 months... Because, I was working in a... with some boats and I didn't like that. So anyways… I came here just for rest. I was going by and I stepped in here out there. I was looking around like this and a man came out and said could he help me. I said no just looking around. He said, do you want a job? Oh-h yea. I said okay! I said yea I'll take the job. So he came in, 15 minutes he came out, and he said "you got the job!" (laughs) I said: what?! Jeez I don't even know where I am! I just wanted to see what it looked like.

I: What is your job here?

Daryl: I look after all the girls.

I: Uh, okay …all the girls.

In the above interview excerpt, Daryl is a nursing home resident with Alzheimer's, but thinks he works at the facility. Having lost his cognitive grounding in the definition of the situation, he recreates the situation in way that makes sense to him. With the information just in this one instance, we can infer quite a bit about Daryl's self sentiments and impressions.

First, we can see that Daryl defines himself as an employee, not a resident, of the nursing home. He claims that his job is "to look after all the girls," "talk to them," and "tell them what they have to do." From this, we can derive a basic ABO (actor, behavior, object) event: "employee takes care of girls." In this sentence, the behavior is the most ambiguous, so we need to tentatively choose an action that approximates what seems to be happening. Our ABO sentence is thus a kind of working hypothesis about the interaction, and is subject to change given additional information. Later in the interview, for instance, he emphasizes his success as a monetary provider, an identity which is echoed above in his mention of still owning "a big home," indicating that "good provider" or "breadwinner" might also be important identities.

We can also see in this excerpt that the defined event confirms Daryl's established sentiments in a way that generates positive emotion. He describes himself as "pleased" with his position, and expresses happy and contented emotions throughout the interview.

So "employee/breadwinner takes care of girls" makes Daryl happy and content. We can estimate EPA ratings for each ABO element (or obtain them from Interact, if available). Knowing the EPA ratings and resulting emotion, we can infer Daryl probably sees himself as somewhat powerful, very good, and slightly active. We now have a basis for predicting how he might react in other situations.

Bayesian Affect Control Theory in the Iterated Networked Prisoner's Dilemma

Joshua D. A. Jung and Jesse Hoey
David R. Cheriton School of Computer Science, University of Waterloo

BayesACT, a generalisation of Affect Control Theory (ACT), combines affective reasoning with expected utility maximization (rationality) [4]. BayesACT allows for the creation of agents that are both emotionally guided and goal-directed. We have simulated BayesACT agents in the Iterated Networked Prisoner's Dilemma (INPD), and shown that four out of five known properties of human play in the INPD [3] are replicated by these socio-affective agents. In contrast, previously used imitation-based agents are only able to replicate one of the five properties.

The five properties described by Grujić et al. [3] are as follows. First, human play is invariant to network structure. Second, global cooperation rates decline over time, but remain non-zero. Third, cooperation is anti-correlated with reward. Fourth, most humans exhibit "moody conditional cooperative" behaviour, and fifth, human play is stratified into four major groups. We compared BayesACT agents (as defined in [1]) to standard imitative strategies [7] across a range of different network structures and payoff matrices.

For each test, 169 agents of one type (i.e. BayesACT or imitation) were arranged on a static network to play the Iterated Prisoner's Dilemma with their neighbours. These games each lasted for 60 individual rounds (or iterations), a number comparable to those of the largest human studies [3]. For each setting of our test parameters, 20 independent games were played, resulting in 3060 total simulations. Each round, agents chose between cooperation and defection and relayed that choice to each of their partners (network neighbours).

Testing was performed for three different network types (Grid, and Erdös-Rényi for two densities) and three different reward matrices. Additionally, each of the two agents tested had their own unique parameters. In the case of BayesACT, we chose to vary the initial EPA distribution between the original set as presented by [4] and one measured in a human study by [6]. We also applied several different timeouts (0, 1, and 10 seconds) to BayesACT's Monte Carlo search. For the imitation-based agents, we varied q, the probability of randomly selecting any neighbour instead of the highest scorer, from 0% to 100% in 10% intervals. A larger value of q therefore reduces the tendency of the network to settle, but introduces more erratic behaviour.

Ultimately, it was found that, compared to imitation-based agents, BayesACT agents displayed as emergent properties more of the human qualities identified by [3] in the INPD. In particular, we observed the human behaviours of network structure invariance, anti-correlation of cooperation and reward, player type stratification, and (in $2/3$ of the cases we have considered) moody conditional cooperation (MCC), while imitation-based agents displayed only MCC. Full results may be found in [5]. Our work moves a step closer to reproducing human behaviour in the INPD, and may find application both in domains that require human-like behaviour, and those that probe human reasoning. Our future work involves comparisons with additional agent models (e.g. [2]), and application to other networks.

References

[1] Nabiha Asghar and Jesse Hoey. Intelligent affect: Rational decision making for socially aligned agents. In *Proc. Conf. on Uncertainty in Artificial Intelligence*, pages 12–16, 2015.

[2] Ernst Fehr and Klaus M Schmidt. A theory of fairness, competition, and cooperation. *The quarterly journal of economics*, 114(3):817–868, 1999.

[3] Jelena Grujić, Carlos Gracia-Lázaro, Manfred Milinski, Dirk Semmann, Arne Traulsen, José A Cuesta, Yamir Moreno, and Angel Sánchez. A comparative analysis of spatial prisoner's dilemma experiments: Conditional cooperation and payoff irrelevance. *Scientific reports*, 4:4615, 2014.

[4] Jesse Hoey, Tobias Schröder, and Areej Alhothali. Affect control processes: Intelligent affective interaction using a partially observable Markov decision process. *Artificial Intelligence*, 230:134–172, 2016.

[5] Joshua D A Jung and Jesse Hoey. Socio-affective agents as models of human behaviour in the networked prisoner's dilemma, 2017. arXiv:1701.09112.

[6] Joshua D A Jung, Jesse Hoey, Jonathan H Morgan, Tobias Schröder, and Ingo Wolf. Grounding social interaction with affective intelligence. In *Canadian Conf. on A.I.*, pages 52–57. Springer, 2016.

[7] Daniele Vilone, José J Ramasco, Angel Sánchez, and Maxi San Miguel. Social imitation versus strategic choice, or consensus versus cooperation, in the networked prisoner's dilemma. *Physical Review E*, 90(2):022810, 2014.

Semi-Supervised Affective Meaning Lexicon Expansion Using Semantic and Distributed Word Representations

Areej Alhothali aalhotha@cs.uwaterloo.ca

Jesse Hoey jhoey@cs.uwaterloo.ca

David R. Cheriton School
of Computer Science
University of Waterloo
Waterloo, Ontario, N2L3G1

1 Introduction

Sentiment Analysis is a rapidly growing research area that aims to examine humans' emotions/opinion in subjective documents (e.g., product reviews, news articles, social media posts). One of the most popular methods to perform sentiment analysis tasks is to use sentiment lexicons that associate words with their polarity (e.g., positive or negative). These lexicons can be manually compiled (e.g., Harvard General Inquirer (Stone et al., 1966) and Micro-WNOp (Cerini et al., 2007)) or semi-automatically acquired using some labelled words (e.g., SentiWordNet (Baccianella et al., 2010) and MPQA (Wilson et al., 2005)). Several researchers have generated multi-dimensional (*affective meaning*) lexicons that associate words/ concepts with *affective meaning*, a three-dimensional real-value vectors of evaluation, potency, and activity (i.e., valence, dominance, and arousal) (Osgood, 1957; Bradley and Lang, 1999; Warriner et al., 2013). Other researchers have noted that these multi-dimensional models provide a comprehensive and universal representation of human emotions and that a one- or two- dimensional representation is insufficient to represent humans' emotions (Fontaine et al., 2007). The human-coded semantic lexicons are composed of a relatively small set of words, and incur a high cost for the manual annotation. Further, these lexicons do not cover the wide variety of emerging terms (e.g. on the Internet and social media such as *selfie*, *sexting*, or *photobomb*). To overcome this limitation, we propose an approach to extend an affective meaning lexicon using semantic and distributed word representations. Our approach propagates existing sentiment annotations to new words according to word similarity, either according to word semantics or word distributions in large-scale corpora. The results show that using word semantic neural word embedding generates the highest correlations ($\tau = 0.51$) and error rates less than 1.1 with existing labels.

2 Methodology

Label propagation algorithms (Zhu and Ghahramani, 2002; Zhou et al., 2004) rely on the idea of building a similarity graph with labelled (seed words/paradigm words) and unlabelled nodes (words). The labels or scores of the known nodes (words) are then propagated through the graph to the unlabelled nodes by repeatedly multiplying the weight matrix (affinity matrix) against the labels or scores vector. Following the same principle, the graph label propagation algorithm in this paper: 1) creates a set of labeled $L = (X_l, Y_l)$ and unlabelled data points or words $U = (X_u, Y_u)$ where $|U| + |L| = |V|$, V is all the words in the vocabulary set, X is the word, and Y is the sentiment (E, P, A scores) attached to that word; 2) constructs an undirected weighted graph $G = \{E, V, W\}$ where V is a set of vertices (words), E edges, W is an $|V| \times |V|$ weight matrix (where $w_{ij} \geq 0$); 3) Computes the random walk normalized Laplacian matrix $\Delta = D^{-1}W$ (where D is the degree matrix); 4) initializes the labeled nodes/words Y_l with their EPA values, and the unlabeled nodes/words Y_u with zeroes; 4) propagates the sentiment scores to adjacent nodes by computing $Y \leftarrow \Delta Y$ (weighted by a factor α) and clamps the labeled nodes Y_l to their initial values L after each iteration.

We implemented the label propagation algorithm using four different methods of computing affinity matrix and word representations. First, a semantic lexicon-based label propagation (SLLP) in which the graph is built based upon the semantic relationship between words. These semantic features were obtained from WordNet dictionary (WN) (Miller, 1995) and the paraphrase database (PPDB) (Ganitkevitch et al., 2013).

Second, a corpus-based label propagation (CLP) in which vocabulary and weights come from co-occurrence statistics in corpora. The co-occurrence statistics were gathered from the signal media (SM) (Corney et al., 2016) and the North American News (NAN) (Graff, 1995) news corpora. Third, a neural word embedding label propagation (NWELP) that uses two pre-trained word embedding models: skip-gram model (SG) (Mikolov et al., 2013) and Global vector for word representation (GloVe) (Pennington et al., 2014), and fourth, a combination of semantic and distributional methods (semantic neural word embedding label propagation - SNWELP). We use the algorithms to augment a manually-annotated affective dictionary (Warriner et al., 2013). We randomly divided the dictionary (rescaled into $\in [-4.3, +4.3]$) into training-set (5566 words) and testing-set (8349 words). The seed words, which contribute to no more than 1% of all words in each algorithm, are sampled from the training-set, and all results are presented on the testing-set. Words are sampled non-randomly such that they maximally span the EPA space. To compare the induced EPA against the manually annotated EPA, we used Kendall τ rank correlation and mean absolute error (MAE).

The four algorithms just described are all *semi-supervised* in that they only require labels on a small fraction of the training set. In order to ground the results, we used a *supervised* learning algorithm to train a support vector regression (SVR) model on co-occurrence statistics derived from the skip-gram word embedding model (SG) (Mikolov et al., 2013). The supervised method uses *all* the labels in the training set (over 5000 labels).

3 Results

Table 1 shows the results of comparing the induced EPA scores using the label propagation algorithms against their corresponding values in the testing-set. Table 2 shows some of the induced EPA scores and their corresponding values in (Warriner et al., 2013) dataset.

Method	**Corpus**	$\boldsymbol{\tau}$			**MAE**		
		E	P	A	E	P	A
CLP	SM	0.219	0.0263	0.162	1.10	1.09	0.85
	NAN	0.122	0.060	0.084	1.30	1.0	0.99
SLLP	WN	0.388	0.244	0.329	0.91	**0.79**	**0.71**
	PPDB	0.391	0.181	0.309	0.92	0.89	0.79
NWELP	SG	0.437	0.283	0.350	**0.84**	1.08	0.88
	GloVe	0.430	0.113	0.357	1.09	1.07	0.84
SNWELP	PPDB+GloVe	0.434	0.209	0.360	1.09	1.07	0.84
	WN+GloVe	0.445	0.220	0.366	1.07	1.05	0.84
	PPDB+SG	**0.510**	0.284	0.459	1.10	0.97	0.84
	WN+SG	**0.510**	**0.291**	**0.461**	1.10	0.95	0.83
Supervised	SVR	**0.628***	**0.422***	**0.500***	**0.60***	**0.60***	**0.56***

Table 1: The results of the label propagation algorithms in comparison with the ground truth EPA values. Method= the algorithm used for lexicon induction, τ = Kendall's τ correlation and MAE=Mean Absolute Error. CLP, SLLP, NWELP and SNWELP are all *semi-supervised* and use only a small set of labels for **sampled seed words**, where as the Supervised algorithm (bottom row) uses all labels in the training set. The highest scores of the label propagation algorithms are in a **boldface**. The highest scores of all the algorithms are in **boldface***.

Word	**Method**	**Induced EPA**	**True EPA**
injustice	SG+WN	[-1.9, 0.3, -1.7]	[-2.7, 1.6, -1.86]
fearful	SG+WN	[-2.8, -0.1 , -2.0]	[-2.5, 0.5, -2.0]
evil	SG+PPDB	[-2.1, 0.1, -1.5]	[-2.9, 0.7, -1.5]
successful	SG+PPDB	[2.5, -0.6, 2.0]	[2.97, 0.09, 2.9]

Table 2: Some example of the induced EPA and their EPA ratings from Original-EPA-lexicon and the induced EPA values using semantic and neural word embeddings label propagation (SNWELP).

4 Discussion and Conclusion

In this study, we propose a set of semi-supervised graph-based lexicon induction algorithms to expand sentiment lexicons. We found that, with only as few as 50 labeled words, error rates as low as 0.83 and τ correlation as high as 0.51 are possible in some dimensions. Comparing the results across the different affective dimensions (E,P, and A) shows that the rank correlation τ for potency (P) was low in comparison with the scores for evaluation (E) and activity (A) in both the semi-supervised algorithms and the supervised algorithm. While the rank correlation τ of the evaluation (E) scores were the highest in all the algorithms. This would indicate that words with similar word embeddings have a similar evaluation scores.

References

[1] Stefano Baccianella, Andrea Esuli, and Fabrizio Sebastiani. "SentiWordNet 3.0: An Enhanced Lexical Resource for Sentiment Analysis and Opinion Mining." In: *LREC*. Vol. 10. 2010, pp. 2200–2204.

[2] Margaret M Bradley and Peter J Lang. *Affective norms for English words (ANEW): Instruction manual and affective ratings*. Tech. rep. Technical Report C-1, The Center for Research in Psychophysiology, University of Florida, 1999.

[3] Sabrina Cerini, Valentina Compagnoni, Alice Demontis, Maicol Formentelli, and G Gandini. "Language resources and linguistic theory: Typology, second language acquisition, English linguistics, chapter Micro-WNOp: A gold standard for the evaluation of automatically compiled lexical resources for opinion mining". In: *Franco Angeli Editore, Milano, IT* (2007).

[4] David Corney, Dyaa Albakour, Miguel Martinez, and Samir Moussa. "What do a Million News Articles Look like?" In: *Proceedings of the First International Workshop on Recent Trends in News Information Retrieval co-located with 38th European Conference on Information Retrieval (ECIR 2016), Padua, Italy, March 20, 2016*. 2016, pp. 42–47. URL: `http://ceur-ws.org/Vol-1568/paper8.pdf`.

[5] Johnny RJ Fontaine, Klaus R Scherer, Etienne B Roesch, and Phoebe C Ellsworth. "The world of emotions is not two-dimensional". In: *Psychological science* 18.12 (2007), pp. 1050–1057.

[6] Juri Ganitkevitch, Benjamin Van Durme, and Chris Callison-Burch. "PPDB: The Paraphrase Database." In: *HLT-NAACL*. 2013, pp. 758–764.

[7] David Graff. *North american news text corpus*. 1995.

[8] Tomas Mikolov, Ilya Sutskever, Kai Chen, Greg S Corrado, and Jeff Dean. "Distributed representations of words and phrases and their compositionality". In: *Advances in neural information processing systems*. 2013, pp. 3111–3119.

[9] George A Miller. "WordNet: a lexical database for English". In: *Communications of the ACM* 38.11 (1995), pp. 39–41.

[10] Charles Egerton Osgood. *The measurement of meaning*. Vol. 47. University of Illinois Press, 1957.

[11] Jeffrey Pennington, Richard Socher, and Christopher D Manning. "Glove: Global Vectors for Word Representation." In: *EMNLP*. Vol. 14. 2014, pp. 1532–43.

[12] Philip J Stone, Dexter C Dunphy, and Marshall S Smith. "The general inquirer: A computer approach to content analysis." In: (1966).

[13] Amy Beth Warriner, Victor Kuperman, and Marc Brysbaert. "Norms of valence, arousal, and dominance for 13,915 English lemmas". In: *Behavior research methods* 45.4 (2013), pp. 1191–1207.

[14] Theresa Wilson, Janyce Wiebe, and Paul Hoffmann. "Recognizing contextual polarity in phrase-level sentiment analysis". In: *Proceedings of the conference on human language technology and empirical methods in natural language processing*. Association for Computational Linguistics. 2005, pp. 347–354.

[15] Dengyong Zhou, Olivier Bousquet, Thomas Navin Lal, Jason Weston, and Bernhard Schölkopf. "Learning with local and global consistency". In: *Advances in neural information processing systems* 16.16 (2004), pp. 321–328.

[16] Xiaojin Zhu and Zoubin Ghahramani. *Learning from labeled and unlabeled data with label propagation*. Tech. rep. Technical Report CMU-CALD-02-107, Carnegie Mellon University, 2002.

ACT and BayesACT Occupational Social Status Modeling

David Choi, Robert Freeland, Jesse Hoey

Occupational status is an important concept in sociology that describes a cultural perception of worthiness. Occupations with higher social statuses, like firefighters, are held in higher esteem than occupations with lower statuses, like bankers. These rankings influence everything from social interactions [1] to policy decisions [9], and numerous surveys have been conducted to measure social prestige. However, little convincing work has explained how participants derive culturally agreed upon occupational status rankings, with explanations involving education or income failing to explain how professions like bankers have such low status [2]. We propose a conceptualization of status as a network of societal deference relations [3] which we will show is a more theoretically grounded operationalization of status. According to this model, if one profession repeatedly defers to another, the other profession has the higher status.

A theoretically well-grounded method to compute deference relations is Affect Control Theory (ACT). We can use ACT to compute the perceived cultural likelihood of deference between different professions by computing the deflection when an identity (profession) A performs the action *"defers to"* on another identity B. If the deflection is high, A is unlikely to defer to B. For each profession A in a set of 304 occupations, we computed the averages of the deflections when A deferred to other professions in the set. High averages mean that the profession societally tends not to defer to others and therefore has a higher social standing. These average deference deflections (shown in Figure 1. (b)) correlate much more strongly with Harris Poll occupational status scores (a prominent occupational status ranking) [8] than General Social Survey occupation prestige scores computed by Nakao and Treas [6] (Figure 1. (a)), yield results that match with measurements of social value, favour cultural esteem over financial power, and strongly predict General Social Survey workplace outcomes like respect, happiness, and job satisfaction [11].

We can refine our model deference calculations by using a recent generalization of ACT, called Bayesian Affect Control Theory (BayesACT). This formulation represents identities as probability distributions in EPA space instead of simple points and transitions between identities according to a Markov process [5, 10]. There are several advantages of this, one of which is deflection of average identities differs from average deflection of identities. That is, a clergy deferring to a file clerk would have a low deflection according to ACT, but the polled variances in the identities of clergy and file clerk are great enough that many people would think deference has a very large deflection (e.g., if they have a negative view of clergy). Average deference deflections using BayesACT better models an overall societal view and correlates more strongly (Figure 1. (c)) with occupational status than ACT.

Deference deflection means may be inaccurate in computing a society-wide status measure because deferences are considered in isolation. For example, deference from an actor with high status may be culturally more significant than deference from low status. Similar results are often seen in social networks [4], and so we used a modification of PageRank [7] to compute status measures. We created the complete graph of profession deference by transforming deferences into directed edges and computed the eigenvector of the normalized adjacency matrix to yield occupational status measures (Figure 1. (d)), which had stronger correlations with Harris Poll scores than the other three measures.

We describe a computational derivation of how cultures agree upon occupational status scores based on the ACT, and refined this derivation with probabilistic BayesACT and graph centrality information propagation. These derivations correlate better with status than other approaches and maintain construct validity. Our model also suggests a framework for understanding similar constructs by using different actions and identities.

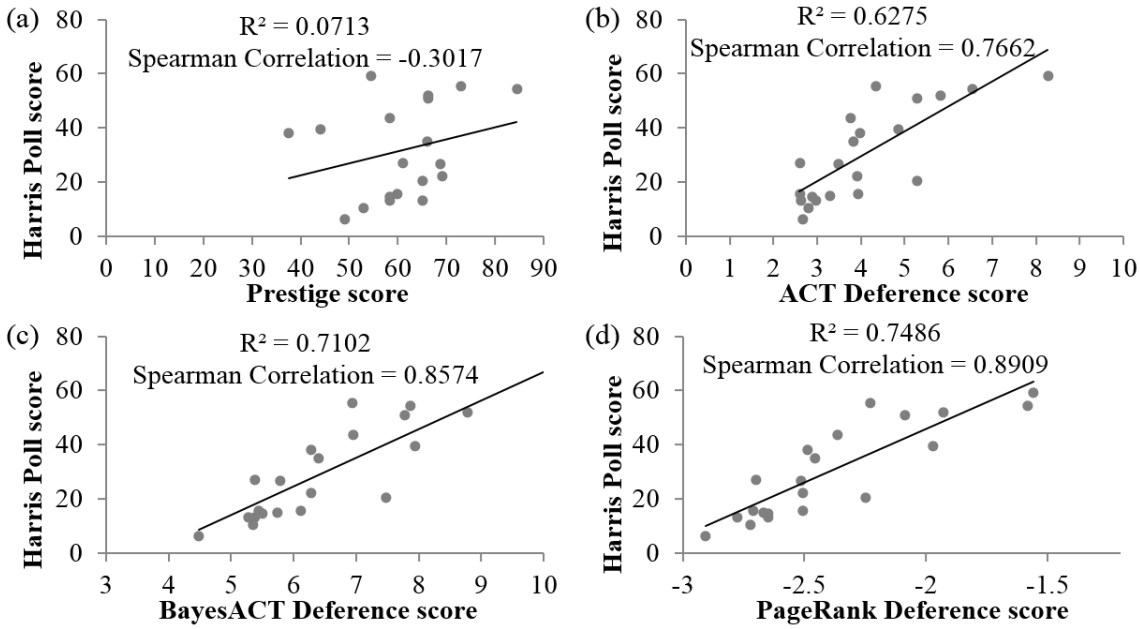


Figure 1: Harris Poll scores [8] against Prestige (a), ACT deference (b), BayesACT deference (c), and PageRank deference (d) scores

[1] Asad L Asad and Monica C Bell. Winning to learn, learning to win: Evaluative frames and practices in urban debate. *Qualitative Sociology*, 37(1):1–26, 2014.

[2] Erzsebet Bukodi, Shirley Dex, and John H Goldthorpe. The conceptualisation and measurement of occupational hierarchies: a review, a proposal and some illustrative analyses. *Quality & Quantity*, 45(3):623–639, 2011.

[3] Peter Hedström and Peter Bearman. *The Oxford handbook of analytical sociology*, chapter Status. Oxford University Press, 2013.

[4] Julia Heidemann, Mathias Klier, and Florian Probst. Identifying key users in online social networks: A PageRank based approach. *ICIS*, 2010.

[5] Jesse Hoey, Tobias Schröder, and Areej Alhothali. Affect control processes: Intelligent affective interaction using a partially observable Markov decision process. *Artificial Intelligence*, 230:134–172, January 2016.

[6] Keiko Nakao and Judith Treas. *Computing 1989 occupational prestige scores*. National Opinion Research Center, 1990.

[7] Lawrence Page, Sergey Brin, Rajeev Motwani, and Terry Winograd. The PageRank citation ranking: Bringing order to the web. Technical report, Stanford InfoLab, 1999.

[8] Corso A. Regina. Harris Poll #86, August 4, 2009. Rochester: The Harris Poll, Harris Interactive, 2009.

[9] Cecilia L Ridgeway. Why status matters for inequality. *American Sociological Review*, 79(1):1–16, 2014.

[10] Tobias Schroeder, Jesse Hoey, and Kimberly B. Rogers. Modeling dynamic identities and uncertainty in social interactions: Bayesian affect control theory. *American Sociological Review*, 81(4), 2016.

[11] Tom W Smith, Peter V Marsden, Michael Hout, and Jibum Kim. The General Social Survey cumulative codebook: 1972-2012 [machine readable data file]. 2013.

Understanding Ambiguous Events

Jessica L. Collett and Kayla Pierce, University of Notre Dame

Introduction: When interpreting events, individuals seek information on three aspects of occurrences: the actor (A), behavior (B), and object (O) (MacKinnon 1994). However, complete information is not always available. For example, in the specific event – a police officer shoots a dog – information available to interpreters could take five forms: 1) Police officer shoots dog (ABO), 2) Police officer fires shots (AB), 3) A police officer did this to a dog (AO), 4) Dog shot (OB), or 5) Shots fired (B). These five statements not only represent variations of the ABO structure, but also common organizing frameworks for news headlines.

Background: Our project initially began as an exploration of the connection between news headlines and cognitive processes (using ACT). We asked: are readers more interested in a surprising headline that is complete, like "Police officer shoots dog," or an incomplete headline, similar to those used as "clickbait," like "Police officer fires shots." The latter could either be about an unexpected event (e.g., at a child or friendly animal) or one consistent with cognitive schemas (e.g., at a criminal or a rabid dog)? In addition to determining whether incomplete information dampens or piques interest (Fiske and Neuberg 1990), we hoped to locate which missing information (A, B, or O) is most likely to draw an observer's interest (Nelson 2006) – a question that is not only practically relevant, with insight for journalists and others interested in mass communication, but also important for social psychological theories of how persons make sense of ambiguous information .

To answer these questions, we presented a list of high-deflection headlines to 500+ mTurk respondents, varying the structures of the event (see Table 1) and the components (Table 2). We found that respondents were most interested in full, high-deflection headlines (X^2 42.58, p<.001, *df* = 5) and that those that lacked a person (i.e., an actor [BO] or object [AB]) or persons (i.e., B alone) were significantly less likely to be selected than expected by chance. While somewhat interesting, we believe that there is much more to learn about ACT, cognitive processes, and clickbait headlines or other ambiguous events from our data.

Conference Presentation: For the ACT conference this summer, we would like to briefly introduce our research design, survey, and the types of data we collected, and share some of our most interesting findings to an audience of experts to get a sense of what they see as most promising in the data For example, we hope to share trends in our respondents' interpretations of the headlines. For full events (ABO), we asked "Why do you think this happened?" We coded these qualitative responses for modification, redefinition, and omission, as well as for sequencing (Ramos, Smith-Lovin and Young 2016) and are planning to code the responses using automated sentiment analysis algorithms (see Table 3). For incomplete headlines, we asked respondents to fill in the missing information (Table 4). We transformed these responses into EPA ratings in order to examine heterogeneity across respondents in the deflection generated by the headline. We also have data on an ambiguous event structure, where a person was "involved in" an event, to gauge the role respondents believe the person played in the event (A or O), and we can explore whether structure or specific components influence attention, as we asked respondents why they chose particular headlines to read. Finally, we closed the survey by collecting demographic information, including age, sex, race, education, parental status, and political leanings of respondents (see Table 5). With this data we should be able to evaluate how particular attributes might inform interest in news stories, as well as influence patterns of and interpretation (e.g. Are parents more interested in events with children, or certain groups more interested in stories about shooting? Do liberals fill in the targets of police aggression with higher levels of E or lower levels of P than conservatives?).

Table 1. Event structures and their popularity

Event Structure	*Examples with same A-B-O*	*Selected to Read*
ABO	Police officer shoots infant	39%
AB	Who a police officer shot	9%
AO	A police officer did this to an infant	15%
BO	Infant shot	10%
B	Reported shooting	11%
ambiguous A/O+B	Police officer involved in shooting	16%

Table 2. Components of events, pulled from news headlines

Actor (A)	father/mother, police officer, man/woman, caregiver
Behavior (B)	attacks, kills, stabs, shoots, abandons
Object (O)	elderly man/elderly woman, infant, boy/girl, dog

Table 3. Example explanations for high-deflection events

Headline	*Explanation*	*Coding*
Caregiver attacks girl	A babysitter, or daycare worker, hit a girl	RA, RB
	A babysitter struck a girl in her care.	RA, RB
	The caregiver was on drugs.	MA
Police officer stabs infant	The police officer has a mental breakdown.	MA
	It was an accident.	MB
	It sounds like a police officer stabbed a helpless child.	RO
Father shoots infant	A gun accidentally went off.	NA, NO
Father shoots dog	Dog bit his kid and he shot it.	SEQ

Table 4. Sample interpretations of ambiguous events

Headline *(Prompt)*	**Sample Responses**
Who a caregiver abused *(Who do you think this was done to?)*	a baby, an elderly person in their care, a mom, a child, an elderly man, elderly relative, elderly person, senior citizen
A man did this to a boy *(What do you think was done?)*	sexually abused, help, assault, give a reward, saved from a gator.
Infant attacked *(Who do you think did this?)*	a babysitter, a step-parent, the mother's boyfriend, the family pet, a dog (2), an animal
Reported Shooting *(Who do you think fired the shots? Who was shot?)*	black person_black person, intruder_homeowner, man_man, criminal_store clerk, police_crime suspect, police_black man, gang member_gangmember, mentally-ill person_civilian
Man involved in abuse *(What happened?)*	a man abused someone (A), a woman probably beat her husband (O), child abuse (A), priest abused altar boys (A)

Table 5. Demographics

Age	35.6				
Male	52%	**Education**		**Political Scale**	
Race		*Less than HS*	0.3%	*Extremely Liberal*	12%
White	78%	*High School/GED*	13%	*Liberal*	25%
Black	6%	*Some College/Associates*	38%	*Slightly Liberal*	17%
Hispanic	6%	*4-year College Degree*	38%	*Moderate*	20%
Asian	8%	*Masters Degree*	8%	*Slightly Conservative*	11%
Other	3%	*Doctoral/Professional*	3%	*Conservative*	11%
Parent	38%			*Extremely Conservative*	4%

Error Revisited: The Meaning and Ramifications of Variance for Affect Control Theory

Brent Curdy, Duke University

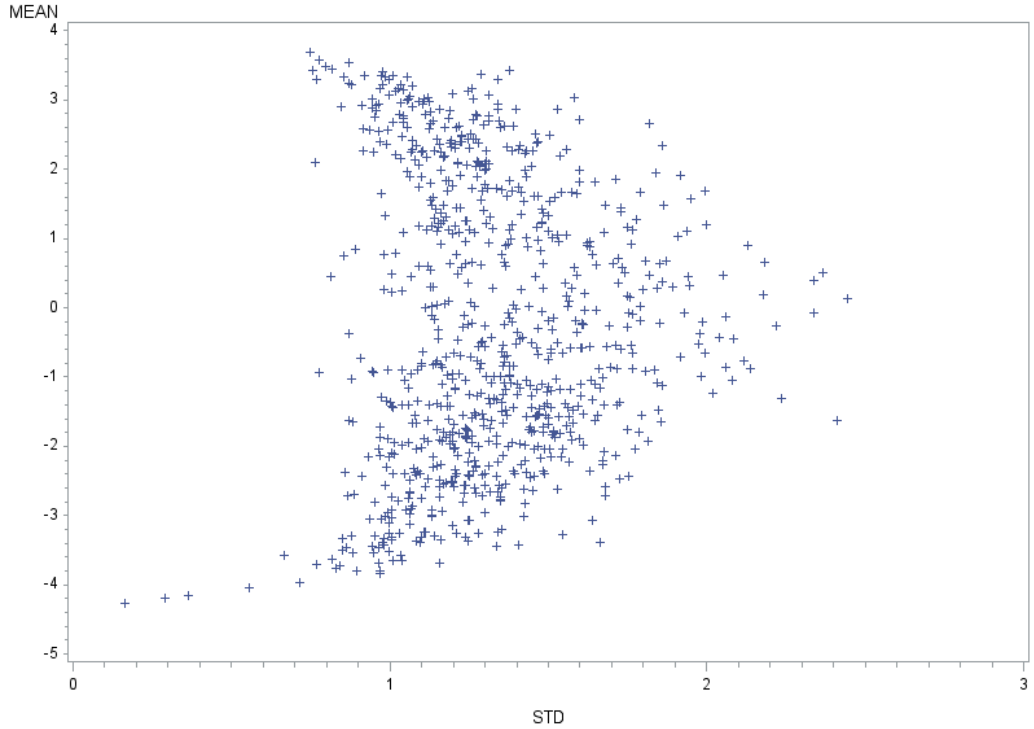
Abstract

Research based in the “culture as consensus” paradigm aims to discover and describe norms within a society by analyzing similarity, rather than difference, within and between cultures. Affect Control Theory represents one approach to this line of research that depends heavily on consensus in order to measure the “affective meaning” of identities, behaviors, and emotions in a given culture. Traditionally, the theory uses mean point-estimates collected from small groups of “cultural experts” to define affective meanings along three dimensions: evaluation, potency, and activity. Variation among respondents is considered measurement error attributed to respondents' insufficient cultural inculcation. Past research has examined the demographic covariates correlated with low cultural inculcation and divergence from peer-rated meanings. Research explains variation in concept ratings as the result of different enculturation processes attributed to a respondent's gender, race, education, and/or socioeconomic status. Moreover, such has been the focus on attaining similarity among responses and the *a priori* theoretical assumption of cultural expertise so ubiquitous, that variation in concept ratings has been considered little more than a data cleaning problem.

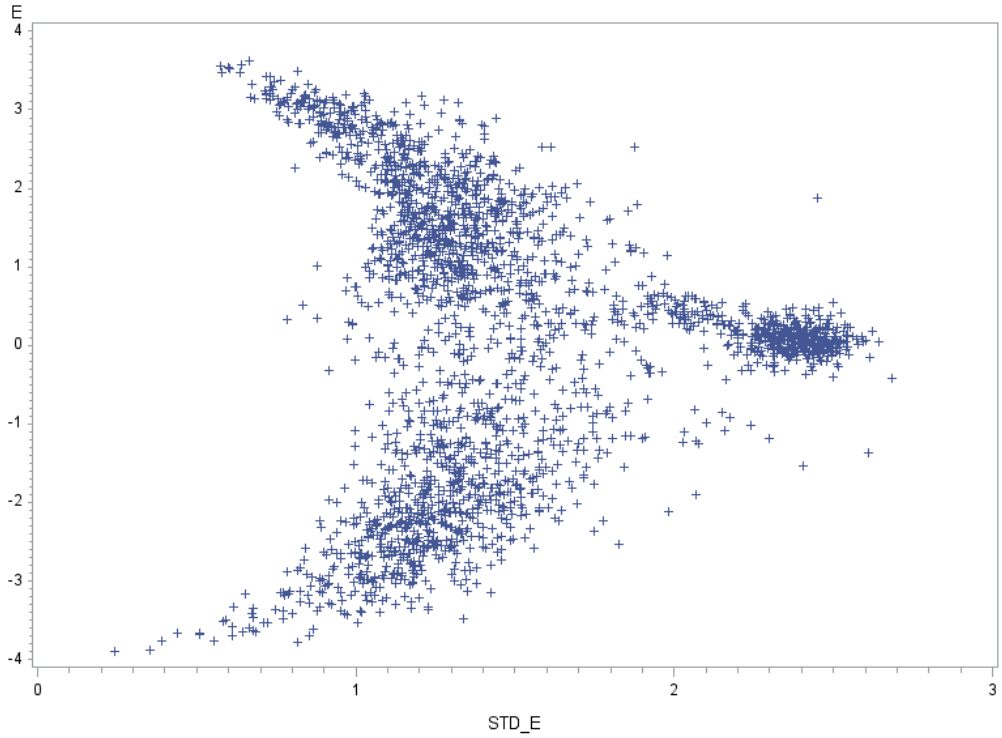
This research takes a different approach to address the phenomenon of variations in ratings. Rather than asking what attributes of a *respondent* correlate with divergence from mean ratings and thereby assuming insufficient cultural expertise, I ask what are the attributes of the *concept* that it would be rated differently by presumed cultural expert respondents. Rather than focus on the characteristics of *respondents*, this research focuses on the characteristics of *concepts* to explain variation in ratings.

Using recently collected large dictionary studies collected from both university students (the theoretically preferred respondents) and lay people (via Amazon Mechanical Turk), I show that up to 69% of neutral-evaluation concepts are estimated to be neutral by virtue of deviations greater than 1.5 std above and below the mean (See Figures 1 and 2 for an example). I also review methods for identifying hitherto unresolved sources of measurement error, including word difficulty and concept familiarity. ACT does not traditionally think of variation as inherent to a concept; consequently, there are only three theoretically asserted methods of differentiating and grouping concepts: Identity domains, gender, and *institutionality*. I test for variability in concept ratings along these dimensions as well as use grounded theory create additional concept groupings by analyzing the correlation between concepts' semantic meanings and respondents' sociodemographic characteristics.

University Student Evaluation Means by Standard Deviations



MTURK Evaluation means by Standard Deviations



Discordantly Meaningful: Examining Cognitive Mechanisms of Culture and Action

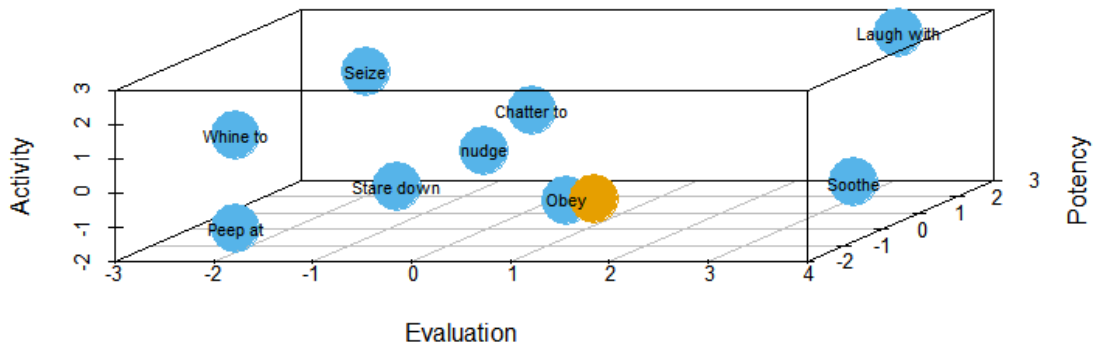
Affect Control Theory has a long history of robust predictive ability. As we usually do not create and test events we know to be illogical, however, it is possible that results thus far have been unintentionally biased in favor of deflection's significance. In order to create a rigorous test and verify the predictive ability of deflection, I devised and orchestrated a validation study which removed the possibility of researcher bias. A representative identity and behavior was selected from the origin and from each octant of EPA space, and respondents were asked to choose the best possible behavior to complete the 81 events generated by crossing each of the 9 identities. If ACT's mechanism of deflection is a definitive predictor, respondents should choose from the possible behavior choices the one that is closest in EPA space to that of the mathematically optimal deflection-reducing behavior for each of the 81 events. Results from a negative binomial regression showed that deflection is indeed significantly predictive. The difference in the log of expected counts of respondent choice decreases by .052 units ($p<0.001$) per every unit increase in overall deflection score; deflection does in fact appear to be a cognitive mechanism that guides affective decisions and event evaluations. Deflection, however, is not the only predictive mechanism.

ACT's predictions are predicated on the mechanism of deflection reduction, with the presumption that social institutions impose cognitive constraints on this process. The newly-developed ACT of Institutions (ACT-I) has specified a new mechanism of cognition, one which explicitly takes into account the necessity of identity selection's adherence to social institutions. This calls in to question what must occur when an event is either institutionally sensible or low deflecting, but not both. How do these mechanisms work in concert? Evidence from a 3-condition experiment shows that in contrast to ACT predictions, but consistent with ACT-I predictions, respondents reported that high deflecting, institutionally concordant events were more plausible and more likely than low deflecting, institutionally discordant events: meaning disruptions elicited by institutionally out-of-place behaviors or identities are as or more impactful than affective meaning disruptions captured by ACT's impression change equations. In keeping with the results of the validation study, deflection remained highly significant; a linear mixed model showed that when controlling for institutional concordance, deflection had a nearly 1:1 ratio with likelihood ratings. Institutional concordance, however, is paramount. The mechanism of deflection reduction is highly predictive of likelihood ratings and remains so when controlling for institutional concordance, but the mechanism is not initially activated unless the event first possesses institutional concordance. This has been the missing puzzle piece in the equations (though not the assumptions) of Affect Control Theory. While both mechanisms significantly determine estimations of event likelihood, institutional concordance is essential to event processing and must be incorporated into ACT's formalized equations. This research offers a clearer picture of the tandem operation of two distinct cognitive mechanisms, helping to link the unconscious and the conscious elements of cognitive processes for the understanding of social interaction.

Validation Tables/Figures:

Representative Octant Space Identities and Behaviors

Octant Space	Behavior	EPA Profile	Identity	EPA Profile
HHH	Laugh with	3.23 2.48 2.53	firefighter	3.26 3.01 2.31
HHL	Soothe	2.92 2.11 -1.64	psychiatrist	1.78 1.80 -1.15
HLH	Chatter to	0.45 0.06 1.43	child	1.97 -1.17 2.01
HLL	Obey	0.91 -0.25 -1.05	janitor	1.49 -0.99 -1.02
LLL	Peep at	-2.13 -1.05 -1.5	coward	-2.35 -3.05 -2.08
LLH	Whine to	-2.01 -1.37 1.40	crybaby	-2.47 -2.08 1.94
LHL	Stare down	-1.43 1.40 -1.41	drug dealer	-2.26 1.57 -0.73
LHH	Seize	-1.91 1.84 1.74	gossip	-2.27 0.99 1.74
neutral	nudge	-0.03 0.01 0.29	stranger	-0.05 -0.17 -0.20



Above figure depicts the EPA space locations for the validation study's representative behavior options (blue) alongside the mathematically-optimal deflection-reducing behavior for the event "A janitor is likely to _____ a janitor"

Mechanism Experiment Tables:

Mean Likelihood Ratings by Condition

Condition	Mean Likelihood Rating (1-100)
1. Institutionally concordant, high deflection	80.36
2. Institutionally concordant, low deflection (control)	89.07
3. Institutionally discordant, low deflection	12.17

Effects on Event Likelihood Ratings: A Linear Mixed Model

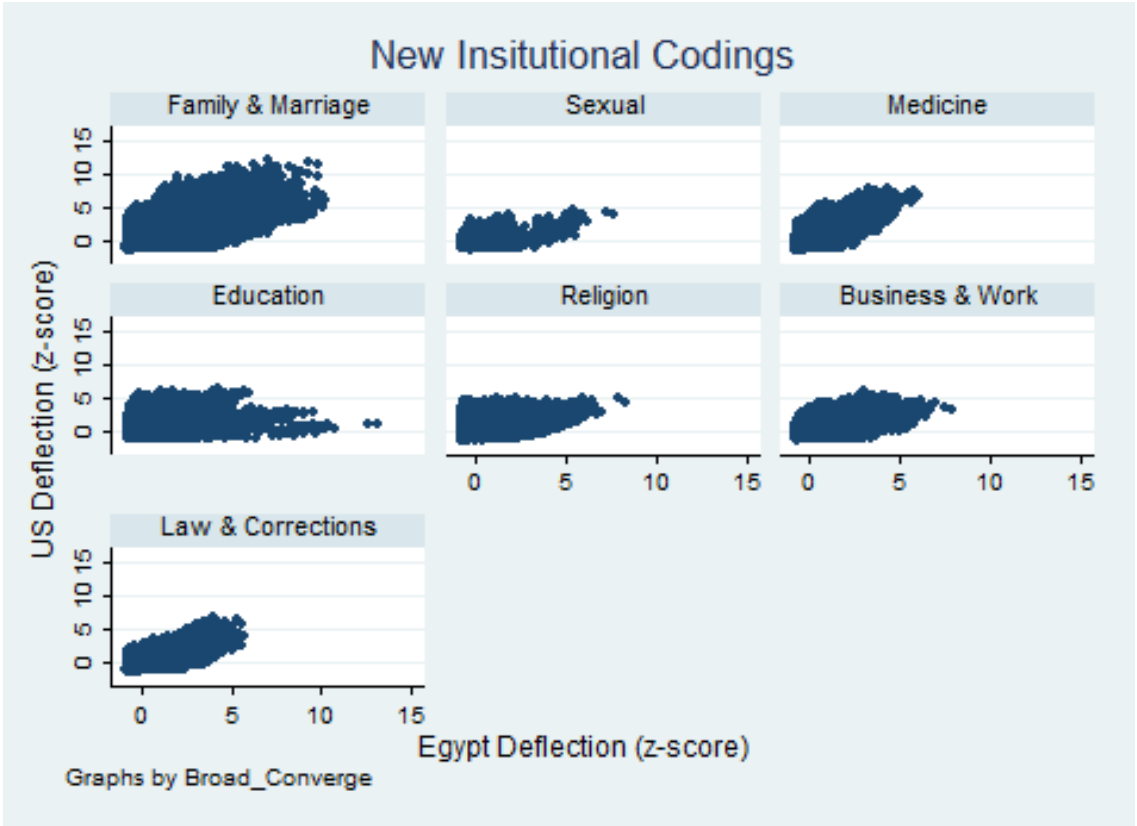
Predictor	Coefficient (standard error)
Event deflection score	-0.81*** (0.22)
Institutional concordance	77.85*** (3.36)
Constant	15.05*** (2.54)

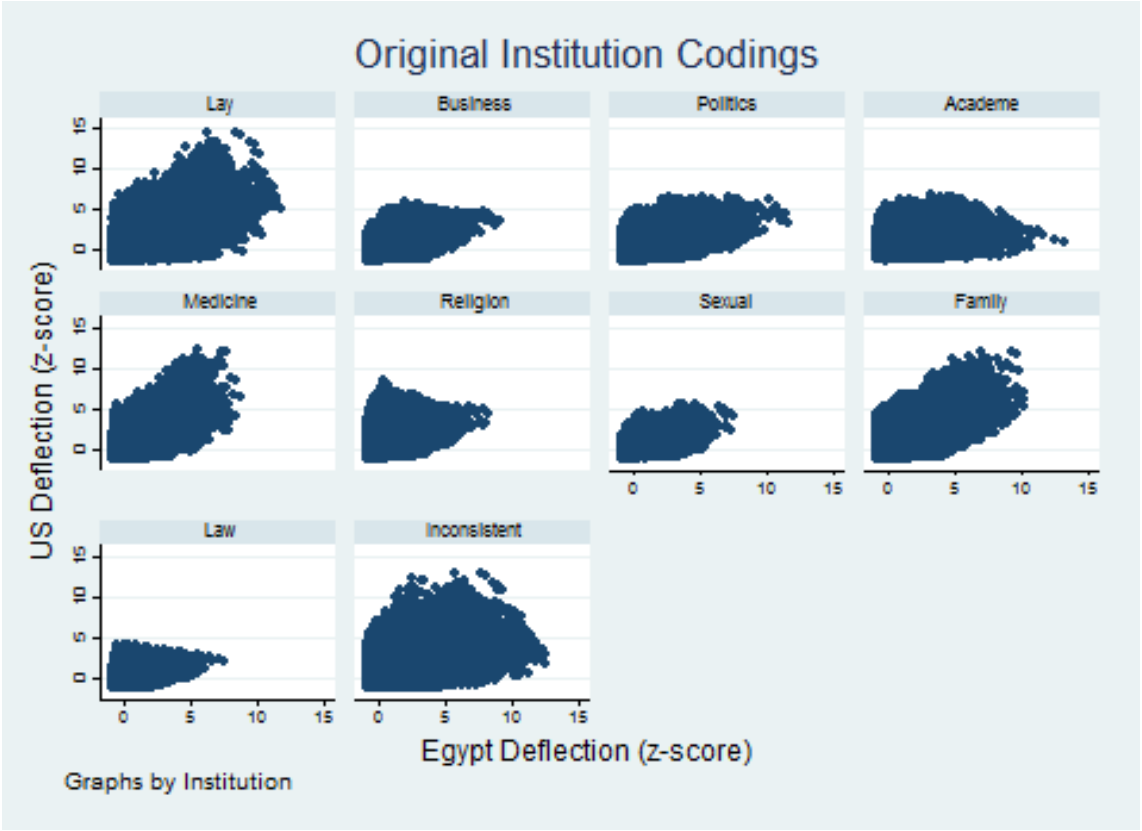
p<.001***

Improbable Events: A Cross-Cultural Examination of Deflection Across Institutions in the US and Egypt

Bryan C. Cannon, Chelsea Rae Kelly, & Dawn T. Robinson

MacKinnon and Heise (2010:7) locate social institutions at the "intersection of cultural structure and social structure," arguing that they develop out of the routinization of interpersonal activities. We expect, then, that social institutions should constitute a critical site for investigating cross-cultural differences in routine interactions. We examined roughly thirteen million interpersonal events simulated from recently-estimated equations describing impression change dynamics in the United States and Egypt. These constitute all possible events that can be constructed from the overlapping corpus of identity and behavior ratings available in the newly-collected (2015-2016) data from both cultures. We present preliminary analyses describing the relationship between the predicted deflection scores produced by interpersonal events across various social institutions in each of the two cultures. To account for the different scale of deflection predictions based on the two sets of impression change equations containing different numbers of terms, we examine deflections that are standardized (using z-scores) within each culture. We coded these events for institutional consistency between the two actors using both the classical institutional categories and the new empirically grounded institution codes found in MacKinnon and Heise (2010). Preliminary examinations of the joint distributions of deflection scores for the two cultures reveal considerable differences in the relative degree of deflection produced by interpersonal events in the two cultures across the various institutions. While interpersonal behaviors within the institutions of Law & Corrections, Medicine, and Family produce patterns of deflections that are highly related in the U.S. and Egypt, more dramatic inconsistencies in the predicted degree of deflection seem to characterize events in the Academic/Education, Religious, Sexual, Business and Work, and Political institutions.


New Insitutional Codings
Family & Marriage
Sexual
Medicine
Education
Religion
Business & Work
Law & Corrections
US Deflection (z-score)
Egypt Deflection (z-score)
Graphs by Broad_Converge


Original Institution Codings
Lay
Business
Politics
Academe
Medicine
Religion
Sexual
Family
Law
Inconsistent
US Deflection (z-score)
Egypt Deflection (z-score)
Graphs by Institution

The Identity Labeling Problem

Kenneth Joseph

Network Science Institute, Northeastern University

Institute for Quantitative Social Science, Harvard University

ACT asserts that the way we label ourselves and others impacts our behavior in social settings. What the theory has never demanded, however, is a rigorous model of how one decides which identities to apply in the first place. Roughly speaking, Affect Control Theorists, in particular Heise and MacKinnon (2010), have purported a heuristic two-step model for how such decisions are made. First, an individual determines the most appropriate institution for a given social situation. This decision limits the scope of possible identities that could be applied - for example, an interaction in the "family" institution cannot have a participant with the identity "professor". After this institutional decision is made, affective information and partial definitions of the social situation at hand are then used to "fill in the blanks" for the identity of any unlabeled individuals.

In my recent work, I have suggested and provided initial remedies for at least two problems with this conceptualization of how individuals are labeled:

First, institutions simply do not exist within (Bayes)ACT's mathematical model; they are merely hard and hardly-ever used constraints. It is for this reason that artificial agents in BayesACT simulations can revert to situations like the following, quoted from Schröder et al. (2017): "...both agents have developed the shared belief that one of them (agent A) is an 'executioner' while the other (agent B) is a 'great grandmother' ". While *affectively*, this made sense given initial constraints, from an institutional perspective this identity pairing is unlikely. To this end, the first part of my talk would introduce recent work on a statistical model of ACT that jointly considers institutional and affective information (Joseph et al., 2017). I will give a high-level explanation of how I learn the parameters of this model (including EPA profiles for identities not in existing dictionaries) from text data. Figure 1 shows joint affective/institutional structures learned by the model that might be used in to provide labels for individuals in social situations.

Second, there is limited evidence that a two-step model of identity selection (i.e. first choose an institution, then rely on affective information) is actually how people make identity labeling decisions in the real world. Indeed, recent evidence from "cognitive" social psychologists suggests that affective and semantic information work *together*, at the same time, to produce identity labelings (Ehret et al., 2014). To this end, I will give a high level overview of both published (Joseph and Carley, 2016) and more recent unpublished work (in collaboration Jonathan Morgan) showing that, indeed, a two-step process may not be appropriate to describe how people define social situations with identities. Instead, affective and semantic (institutional) information combine in interesting ways to produce definitions of situation. This evidence is drawn from survey experiments that ask respondents questions like the one displayed in Figure 2, where respondents much choose which identity best "fits" an individual in a hypothetical social situation.

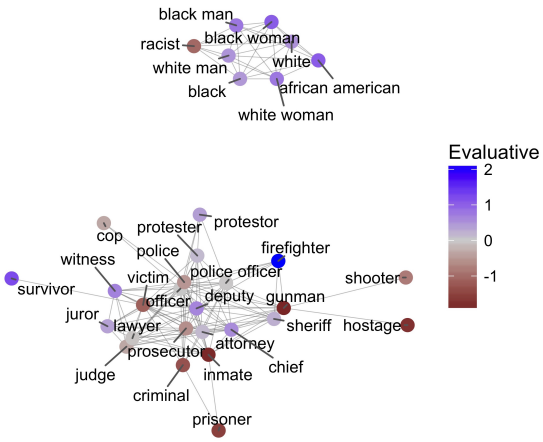


Figure 1: Network views of two institutional structures (a "legal/protest" institution and a "race" institution) learned by the model I have developed on Twitter data relevant to the deaths of Michael Brown and Eric Garner. Links represent strong semantic relationships (and therefore, clusters can be considered institutions) and identities are colored by their evaluative meaning.

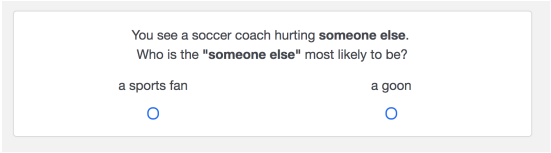


Figure 2: An example of the type of questions we asked survey participants to understand how institutional (semantic) and affective structures combine to generate particular labelings of individuals

References

Ehret, P. J., Monroe, B. M., and Read, S. J. (2014). Modeling the Dynamics of Evaluation A Multilevel Neural Network Implementation of the Iterative Reprocessing Model. *Personality and Social Psychology Review*, page 1088868314544221.

Heise, D. R. and MacKinnon, N. J. (2010). *Self, Identity, and Social Institutions*. Palgrave Macmillan.

Joseph, K. and Carley, K. M. (2016). Relating semantic similarity and semantic association to how humans label other people. *NLP+ CSS 2016*, page 1.

Joseph, K., Wei, W., and Carley, K. M. (2017). Girls rule, boys drool: Extracting semantic and affective stereotypes from Twitter. In *2017 ACM Conference on Computer Supported Cooperative Work.(CSCW)*.

Schröder, T., Hoey, J., and Rogers, K. B. (2017). Modeling dynamic identities and uncertainty in social interactions: Bayesian affect control theory. *Am. Soc. Rev.*

Affie: An affective thesaurus for the professional and the curious

Rohan Lulham, Clementine Thurgood and Daniel Shank

Affect control theory's (ACT) methods, data and conceptual framework provide a basis through which to understand how affect relates fundamentally to people's processing of information (Smith-Lovin, 1993). Interact demonstrates how through modelling these affective processes we can simulate social interaction and people's related experience. As such in social psychology Interact is a powerful and unprecedented tool. In this presentation we suggest ACT may also assist in understanding the role of affect in creative problem solving and in the development of associated tools.

Innovation and creativity in design, business and marketing is increasingly recognized as being related to building on and playing with affective understanding. The capacity to think abstractly – to question, make connections and broaden understanding based on affect and meaning – has become a fundamental skill in many professions. Terms such as 'emotional intelligence' and narratives around successful businesses such as Apple are testament to the new importance of understanding and tapping into an affective logic. There are, however, few tools to assist people to explore the affective relationships between concepts. In this presentation we present a new tool, Affie, for exploring affective relationships that utilizes affect control theory's methods, data and the conceptual framework (Lulham, Thurgood and Shank, 2015).

Affie is a web based application that operates as an affective thesaurus (http://affie.io/). It allows a person to search for concepts, or words, that are affectively, or emotionally, similar to other concepts (i.e. "feel the same as"). The tool utilises existing ACT data sets for identities, modifiers, emotions, behaviours, settings as well as affective data on 400 human values and 200 consumer product concepts. Affective similarity and dissimilarity is determined by calculating the squared Euclidean distance between two concepts across the three dimensions of goodness, powerfulness, and activity. The tool enables a person to search for identities that feel similar to particular values or traits, for example'trust', as displayed in the screen shot of the tool in Figure 2. Conversely it could enable a person to search for products (i.e. watches) that feel the same as particular moods, values or identities.

In addition to the use of the tool in creative innovation process, we believe this tool may have wider appeal to the general public. To the curious, whether its an author writing a script or a teenager wondering about the meaning of particular clothes, Affie provides an experience that may assist them in deepening their understanding. In a similar way to a typical thesaurus being useful to explore concepts with similar literal meanings, Affie may have general utility to the public in looking up and exploring concepts with similar conative or affective meaning. Speculatively in an open online environment, it may be a tool that becomes part of the searching lexicon that many people intermittently use in their everyday lives.

To date, we have explored the utility of the tool in design innovation workshop settings in our research centres, and will shortly be branching out into education for the undergraduate design subject, Designing Emotive Things. We are also intending to participate in an pre-accelerator/incubator program with an Australian Government Funding Body to pursue avenues for research and industry engagement.

Figure 1: Affie search page

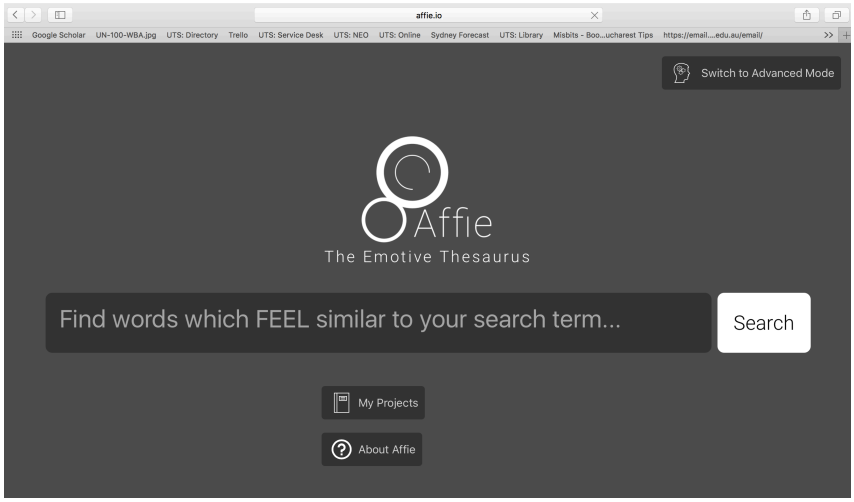
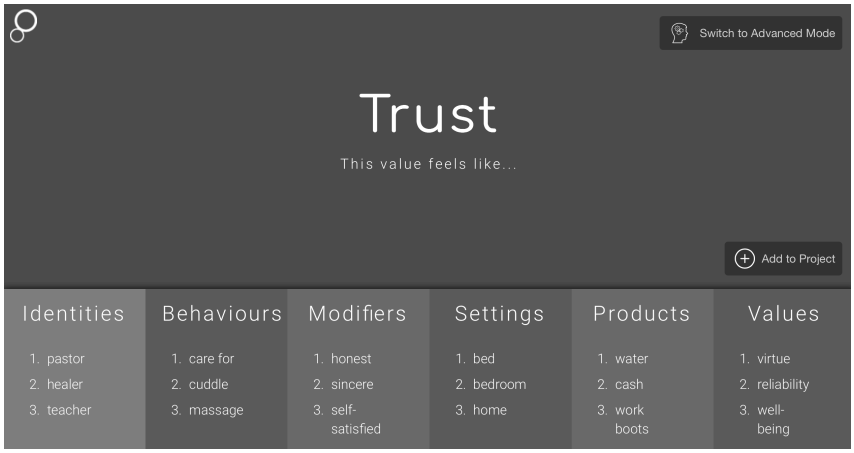


Figure 2: Search results page showing concepts that feel similar to 'trust'



Lulham, R., Thurgood, C. & Shank, D. 2015, 'An affective tool to assist in designing innovations', Interplay: Proceedings of the 6th International Congress of International Association of Societies of Design Research, IASDR, Brisbane, pp. 1361-1379.

Lulham, R., Thurgood, C., Presland, L., Shank, D., Orth, D., & Tomkin, D. (2017). Affie . Retrieved 1 March 2017 from http://www.affie.io/

Smith-Lovin, L. (1992). "An Affect Control View of Cognition and Emotion.". In J Howard and P Callero (Eds.), Self and Society: A Social Cognition Approach (pp. 143-69). Cambridge University Press.

USING SELF-SENTIMENTS TO PREDICT IDENTITY AND BEHAVIOR

Kaitlin M. Boyle
Virginia Tech

The current studies are aligned with previous work that utilizes understandings of the self to study behavior, emotion, and mental health. Study 1 tests the affect control theory of self (MacKinnon and Heise 2010), a mathematical theory that demonstrates a core social psychological principle: individuals strive for a stable and coherent self through identity selection and behavior. In the affect control theory of self, the self is conceptualized as *self-sentiments,* which are measured on three dimensions: evaluation (good/bad), potency (powerful/powerless), and activity (fast/slow). In a longitudinal sample of college men and women, I find the self-sentiment predicts how individuals describe themselves on a range of terms, including primary emotions, both stigmatized and esteemed traits related to mental illness and self-esteem, and various productive and deviant behaviors. While Study 1 uses streamlined calculations to examine a vast array of identity-related concepts and behaviors, Study 2 offers a potential integration of the affect control theory of self and Stryker's (1980) identity theory in order to understand the processes involved in specific identities: the college student, the partier, and the overweight person. This study, which is also longitudinal, links cognitive and socioemotional commitment to individuals' self-sentiments, self-meanings, and identity-relevant behavior and outcomes. The current studies demonstrate the theoretical precision of ACT-Self and the usefulness of structural symbolic interactionism for understanding human behavior and identifying individuals at risk for deviance and deleterious consequences.

Identity Coherence, Social Stress, and Well-Being

Kimberly Rogers, *Dartmouth College*
Kaitlin Boyle, *Virginia Tech*

Much like stratification systems produce both functional benefits and inequality in societies, the multiplicity of identity meanings contained within the self can be seen as both a resource and a potential burden. Individuals with more complex selves can, in some cases, be buffered from situational stress. When selves are comprised of distinct relationships, attributes, and activities that do not share meanings, social breakdowns relating to any one aspect are less likely to impinge on the maintenance of the others (Linville 1985, 1987). The accumulation of many identities can have an insulating effect, decreasing commitment to each, and offering alternative sources of meaning and order when disruptions occur (Thoits 1983, 1986a). It can also increase our access to different sources of social support, facilitating coping in the face of stressful circumstances (Thoits 1986b). At the same time, complex selves place us at higher risk of status inconsistency and role conflict (see Stryker and Macke 1978). Status inconsistency results when our social position differs across social hierarchies (e.g., race, class, gender). Others' expectations for our behavior come into conflict, fracturing our self-concept and reducing our self-esteem (Jackson 1962; Jackson and Burke 1965). Role conflict occurs when different demands are placed on us by our different roles (e.g., work and family).

We believe that these seemingly discrepant sets of findings can be unified through the framework of identity meanings (Heise 2007). Identities with common meanings (e.g., wife and mother, boss and leader) are likely to be activated together, and verified by comparable sorts of behavior. When our selves are comprised of identities that carry similar meanings, we have more options for maintaining our sense of self through interactions, and tend to have others perceive and treat us in ways that meet our expectations. When our selves are comprised of identities with quite divergent meanings and these competing identities become situationally relevant, choosing an appropriate line of action can prove a challenge. Different sorts of behavior optimally confirm each, and others' perceptions and treatment of us may differ from our expectations.

Possessing many different identities can be a resource, but only when these identities carry comparable, positive meanings. When meanings conflict, or when valued identities are threatened and we lack viable alternatives, self-verification and our social interactions are both disrupted, causing social stress and a loss of mastery and self-esteem (see Burke 1991). The chronic experience of these conditions can negatively impact our mental and physical health. In this sense, the possession of coherent identity meanings can be seen as an additional source of privilege for those with consistently high statuses and a stress buffering resource for those with consistently low statuses. For those whose statuses vary greatly, identity incoherence may instead be a source of social stress, and a burden on mental and physical health.

We explore these paradoxes of the self by studying the relationship between identity coherence, social stress, and well-being. We hope to leverage recent theoretical developments (MacKinnon and Heise 2010; Schröder, Hoey, and Rogers 2016) and methodological innovations (Hoey and Schröder 2015; Hoey, Schröder, and Alhothali 2016) to mathematically represent the (in)coherence of self-relevant meanings, overcoming important limitations and critiques of earlier work. Using these novel tools will allow us to test and validate key model predictions based on social theory, and speak to longstanding but as yet unanswered questions in sociology about the fundamental nature of self and identity (Schröder, Hoey, and Rogers 2016).

Research Design

We recruited 200 respondents via Amazon Mechanical Turk, who completed our study online via Dartmouth's Qualtrics survey platform. Participants identified the five social settings in which they spent the majority of their time, then reported (1) the top five identities that they would use to describe themselves in each setting, and (2) the top five identities that others would apply to them in each setting. Each identity provided was rated on the dimensions of evaluation, potency, and activity, as well as an identity prominence scale. After completing these measures, participants responded to a series of measures assessing (1) their self-esteem and self-efficacy, (2) their recent experiences of anxiety, depression, and social stress, (3) their physical health, (4) their perceived and received social support, and (5) their socio-demographic characteristics.

Our initial set of planned analyses will explore variation within social domains. We hypothesize that meaning coherence among the top identities reported for a given social domain (i.e., those likely to be enacted together) can be directly linked with both social stress and health outcomes. Specifically, we expect that respondents with high within-domain variation in identity sentiments will report more social stress and more mental and physical health problems (e.g., anxiety, depression, chronic health problems) than those with low within-domain variation – this includes variation in self-views across identities as well as divergences between self-views and others' views of self. We have recently completed our initial data collection, and analysis will be underway shortly.

In the future, we hope to expand this line of work using experience sampling to document respondents' experiences in the context of everyday life rather than in a survey or a research lab. We believe that such a design would help show that the processes tested in our initial study extend to actual experiences in interaction and their consequences – effects stemming from the identities we enact and others' responses to them, not simply our subjective beliefs about the self. Further, experiential data would allow us to test for the hypothesized causal relationship between identity incoherence, social strain, and negative health outcomes.

References

Burke, Peter J. 1991. "Identity Processes and Social Stress." *American Sociological Review* 56: 836-49.

Heise, David R. 2007. *Expressive Order: Confirming Sentiments in Social Actions*. New York: Springer.

Hoey, Jesse and Tobias Schröder. 2015. "Bayesian Affect Control Theory of Self." Proceedings of the AAAI Conference on Artificial Intelligence, Austin, Texas. Available online at: http://www.aaai.org/ocs/index.php/AAAI/AAAI15/paper/view/9440.

Hoey, Jesse, Tobias Schröder, and Areej Alhothali. 2016. "Affect Control Processes: Intelligent Affective Interaction Using a Partially Observable Markov Decision Process." *Artificial Intelligence* 230: 134-72.

Jackson, Elton F. 1962. "Status Consistency and Symptoms of Stress." *American Sociological Review* 27: 469-80.

Jackson, Elton F. and Peter J. Burke. 1965. "Status and Symptoms of Stress: Additive and Interaction Effects." *American Sociological Review* 30: 556-64.

Linville, Patricia W. 1985. "Self-Complexity and Affective Extremity: Don't Put All Your Eggs in One Cognitive Basket." *Social Cognition* 3: 94-120.

------. 1987. "Self-Complexity as a Cognitive Buffer Against Stress-Related Illness and Depression." *Journal of Personality and Social Psychology* 52: 663-76.

MacKinnon, Neil and David R. Heise. 2010. *Self, Identity, and Social Institutions.* New York: Palgrave Macmillan.

Schröder, Tobias, Jesse Hoey, and Kimberly B. Rogers. 2016. "Modeling Dynamic Identities and Uncertainty in Social Interactions: Bayesian Affect Control Theory." *American Sociological Review* 81: 828-55.

Smith-Lovin, Lynn. 2007. "The Strength of Weak Identities: Social Structural Sources of Self, Situation, and Emotional Experience." *Social Psychology Quarterly* 70: 106-24.

Stets, Jan and Richard Serpe. 2013. "Identity Theory." Pp. 31-60 in John DeLamater and Amanda Ward (eds.) *Handbook of Social Psychology*, 2nd edition. New York: Springer. Stryker, Sheldon and Anne Statham Macke. 1978. "Status Inconsistency and Role Conflict." *Annual Review of Sociology* 4: 57-90.

Thoits, Peggy. 1983. "Multiple Identities and Psychological Well-Being: A Reformulation and Test of the Social Isolation Hypothesis." *American Sociological Review* 48: 174-87.

------. 1986a. "Multiple Identities: Examining Gender and Marital Status Differences in Distress." *American Sociological Review* 51: 259-72.

------. 1986b. "Social Support as Coping Assistance." *Journal of Consulting and Clinical Psychology* 54: 416- 23.

Identity Transformation and Weight-Loss: Altering Fundamental Sentiments in an Online Community.

Kathryn J. Lively, Ph.D
Dartmouth College

Last year over two-thirds of American adults were classified as either over weight or obese. And every year, millions of dollars are spent on weight loss programs, gym memberships, supplements or coaches. Despite the effort and resources that many Americans are putting into their attempts to lose weight, most of these efforts are doomed to fail. Indeed, one pessimistic statistic suggests that only one percent of Americans who attempt to lose all of their excess weight will be successful and of that one percent, the majority will have gained their weight back within a relatively short period. Even the National Registry of Successful Weight Loss has had to scale back their criteria - people now only have to have lost 30 pounds or more and kept it off to be considered - in order to have a large enough cohort to study.

Although the scholarship on why people gain weight is clear, our understanding of how people lose weight - and keep it off - is not. Given that weight is such a salient characteristic - acting, in some ways, as a master status that carries significant economic, interpersonal, and social costs, it is surprising how little social psychological attention has been paid to this issue within sociology.

To date, there have been only two studies that have addressed weight loss using insights generated from formal social psychological theory. The first is Ellen Granberg's seminal work on weight loss, which she framed in terms of Burke and Stets' identity control theory and Markus concept of "possible selves." The second is Christine Groar's unpublished dissertation, Weight Loss, Subculture Socialization, and Affective Meanings, which used insights from Heise's affect control theory. This proposed research is a multistage project within sits at the nexus at both Granberg's and Groar's work, by examining shifts in affective meaning among members of an on-line weight loss community, Bright Line Eating, LLC (BLE).

BLE is a for-profit weight loss program that is based entirely online. Started in 2013, by Susan Peirce-Thompson, a Ph.D. in Cognitive Psychology, BLE offers high touch virtual support and boosts successes that far surpass other weight loss programs, including Over Eaters Anonymous and Weight Watchers.

A research faculty at the University of Rochester, Thompson is currently collecting data on the relationship between daily habits and weight loss. At this time, she has several virtual communities (each of then containing between 300-350 people) that house individuals at various stages of the weight loss process. Although many people join BLE because they need to lose weight, others join in order to maintain prior weight loss, and some come to recover from eating disorders, including anorexia and bulimia. As new members join BLE, they are asked if they would like to participate in her data collection efforts and the majority say yes. They are surveyed once a week.

Stage One

I propose to collect two sentiment dictionaries of identities, behaviors, and settings that are related to weight loss and obesity, in general, as well as identities, behaviors, and settings that are specific to the BLE community. I will also ask respondents to provide identity hierarchies and to score those identities and attributes along the three dimensions of affective meaning.

One set of data will be drawn from individuals who are just signing up to join the BLE community, either through the 14-day challenge (the low price point way into the community) or the 8 week bootcamp (the mid range price point of entry). The second set of data will come from a sub set of individuals who Thompson refers to as her "Bright Lifers." Although anyone who has successful completed the 8 week bootcamp can join the Bright Lifer community, I will focus exclusively on those individuals who have reached their goal weight using BLE and have kept the weight off for more of than two years.

The purpose would simply be to determine whether there are significant differences in the affective sentiments and identity hierarchies between those new to the program and those who had been successful in reaching their goals.

Stage Two

If the cross sectional analysis reveals that individuals who were successful at reaching their goal and who have maintained that loss over time have different fundamental sentiments than those entering into the program and/or identity hierarchies populated by more positive, potent, and active identities, then the next phase of the data collection would be to collect affect sentiments and identity markers from individual participants over time. I would then link the affective sentiments to the data that Thompson is already collecting, including the participant's weight, their participation in the online community, and their adoption of other program sanctioned behaviors - including meditation, journaling, weighing and measuring food, etc.

The purpose here would be to understand how and under what conditions affective sentiments and subsequent identity hierarchies begin to shift. I would also be able to compare the experiences of those people who are successful in the program with those who are not.

Stage Three

While the longitudinal data is being collected, I would also interview a number of Thompson's most successful Bright Lifer's regarding their past experience with weight loss as well as their ongoing experience of weight maintenance. These narratives would be analyzed for common themes, but with particular attention paid to shifts in identity and affective meaning.