NorthAmerican
Business Press

American Business Review

Volume 23(1) 2017

23(1) 2017

American Business Review

ISSN: 0743-2348
ISSN Online: 0743-2348

American Business Review

North American Business Press

Atlanta - Seattle – South Florida - Toronto

American Business Review

Volume 23(1)
ISSN: 0743-2348
ISSN Online: 0743-2348

North American Business Press, Inc.
Atlanta - Seattle – South Florida - Toronto

For submission, subscription or copyright information, contact the editor at:

customerservice@na-businesspress.com

Subscription Price: US$ 325/yr

This Issue

Many brand theorists argue that a brand's personality plays an important role in generating consumer engagement with the brand. Although anecdotal evidence and logical arguments support this assertion, researchers have published few empirical studies to verify it. The present study used data from a survey of 132 U.S. college students to show that, indeed, personality dimensions perceived to be characteristic of the North Face brand of clothing do seem to increase engagement with this brand. The consumers viewed North Face as characterized by several positive dimensions, but the most crucial appeared to be that it is not ordinary and that it is a responsible brand. These results not only support the claimed importance of brand personality, but also imply that North Face managers could stress these characteristics of their brand in their promotions to enhance its appeal to engaged and profitable consumers.

This research aims to investigate how interpersonal counterproductive work behaviors impact new product development team performance through teamwork. Specifically, we address two aspects of team work: team trust and team learning. Analyzing survey responses from 26 student teams with hierarchical linear modeling techniques, we demonstrate that team members' interpersonal misbehaviors lead to lower levels of emotional integration and less sharing and acquiring of new knowledge within the team. Furthermore, interpersonal misbehaviors are not only detrimental to effective team collaboration process, but also directly influence the success of new product development projects.

Stakeholders involved in the success of a major league baseball team include owners, managers, players, fans, and fantasy league players. While the performance records of teams and individual players in spring training games have little direct significance to these stakeholders, might they provide some information that would be useful in predicting performance in the upcoming regular season? This study compares the performance of teams and individual players in spring training games and regular season games to determine whether there are any significant relationships that can be used in these stakeholders' decisions.

GUIDELINES FOR SUBMISSION

American Business Review
(ABR)

Domain Statement

The *American Business Review (ABR)* is a peer-reviewed multidisciplinary journal dedicated to publishing scholarly empirical and theoretical research articles focusing on improving organizational management theory, practice and behavior. *ABR* encourages research that impacts the management field as a whole and introduces new ideas or new perspectives on existing research. Accepted manuscripts will focus of bridging the gap between academic theory and practice as it applies to improving the broad spectrum of the management discipline. Manuscripts that are suitable for publication in *ABR* cover domains such as business strategy and policy, entrepreneurship, human resource management, operations management, organizational behavior, organizational theory, and research methods.

Submission Format

Articles should be submitted following the American Psychological Association format. Articles should not be more than 30 double-spaced, typed pages in length including all figures, graphs, references, and appendices. Submit two hard copies of manuscript along with a disk typed in MS-Word.

Make main sections and subsections easily identifiable by inserting appropriate headings and sub-headings. Type all first-level headings flush with the left margin, bold and capitalized. Second-level headings are also typed flush with the left margin but should only be bold. Third-level headings, if any, should also be flush with the left margin and italicized.

Include a title page with manuscript which includes the full names, affiliations, address, phone, fax, and e-mail addresses of all authors and identifies one person as the Primary Contact. Put the submission date on the bottom of the title page. On a separate sheet, include the title and an abstract of 200 words or less. Do not include authors' names on this sheet. A final page, "About the authors," should include a brief biographical sketch of 100 words or less on each author. Include current place of employment and degrees held.

References must be written in APA style. It is the responsibility of the author(s) to ensure that the paper is thoroughly and accurately reviewed for spelling, grammar and referencing.

Review Procedure

Authors will receive an acknowledgement by e-mail including a reference number shortly after receipt of the manuscript. All manuscripts within the general domain of the journal will be sent for at least two reviews, using a double blind format, from members of our Editorial Board or their designated reviewers. In the majority of cases, authors will be notified within 60 days of the result of the review. If reviewers recommend changes, authors will receive a copy of the reviews and a timetable for submitting revisions. Papers and disks will not be returned to authors.

Accepted Manuscripts

When a manuscript is accepted for publication, author(s) must provide format-ready copy of the manuscripts including all graphs, charts, and tables. Specific formatting instructions will be provided to accepted authors along with copyright information. Each author will receive two copies of the issue in which his or her article is published without charge. All articles printed by *ABR* are copyrighted by the *Journal*. Permission requests for reprints should be addressed to the Editor. Questions and submissions should be addressed to:

North American Business Press
5720 Old Ocean BLVD Suite 5
Ocean FL, 33435
editor@na-businesspress.com
866-624-2458

Brand Personality and Brand Engagement

Ronald E. Goldsmith
Florida State University

Elizabeth B. Goldsmith
Florida State University

Many brand theorists argue that a brand's personality plays an important role in generating consumer engagement with the brand. Although anecdotal evidence and logical arguments support this assertion, researchers have published few empirical studies to verify it. The present study used data from a survey of 132 U.S. college students to show that, indeed, personality dimensions perceived to be characteristic of the North Face brand of clothing do seem to increase engagement with this brand. The consumers viewed North Face as characterized by several positive dimensions, but the most crucial appeared to be that it is not ordinary and that it is a responsible brand. These results not only support the claimed importance of brand personality, but also imply that North Face managers could stress these characteristics of their brand in their promotions to enhance its appeal to engaged and profitable consumers.

INTRODUCTION

Branding is a crucial managerial task and consequently a major dimension of marketing theory and practice. Two important aspects of branding are: (1) brands have personalities or human-like characteristics that distinguish them from each other, and these personalities are important to consumers; (2) consumers become "engaged" with brands, meaning that they feel special emotional and symbolic connections with certain brands. Consequently, the topics of brand personality and the relationships that consumers form with their brands attract the attention of both managers (Birkner, 2011) and academic researchers (Aaker, 1997) who share an interest in understanding why and how consumers form relationships with brands (Grisaffe & Nguyen, 2011; Consumer Brand Relationship Colloquium, 2011). The nature of the brand personality/brand engagement relationship, however, has been little studied by researchers.

Two related concerns motivated the present study. The first is, if brands have personalities, how can these be reliably and validly operationalized? Researchers have proposed self-report scales to measure brand personality (e.g., Aaker, 1997), but none is universally accepted. Thus, we sought to determine empirically if a newly developed measure of brand personality (Geuens, Weijters, & DeWulf, 2009) could provide a unique profile of a brand with which some consumers are engaged. Second, managers and researchers think of brand engagement not only as engagement with a specific brand but also a global individual difference variable that distinguishes the extent to which consumers tend to become engaged with brands in general (Sprott, Czellar, & Spangenberg, 2009). We conceived the present study to test Geuens et al.'s (2009) brand personality scale by assessing its factor structure and relationship with engagement for a specific brand, i.e., North Face clothing. Our goals were to test the usefulness of the scale, verify empirically the personality/engagement link, and perhaps provide valuable insights to North Face managers. Our working hypothesis was that aspects of brand personality are associated with brand engagement, although we cannot predict precisely which aspects are because they should vary by brand. Measuring these associations gives valuable information to brand managers. We also sought to determine whether Sprott et al.'s (2009) global brand engagement scale is related to engagement with this specific brand. If so, this finding provides evidence for the validity of the global brand engagement scale and helps empirically distinguish between these two related ways to conceptualize brand engagement. Failure to do so can lead to both managerial and theoretical confusion.

LITERATURE REVIEW

Brand Management and Consumer Engagement

Branding is important for both companies and consumers, but for different, complementary reasons. Firms use brands because, according to Kotler (2000, p. 408), brands facilitate order processing and tracking, give legal protection to unique product features, make product extensions easy, and target different markets. Moreover, managers develop brands and brand strategies to accomplish five related goals: (1) to distinguish their product from competitors and prevent it from being a commodity, (2) to give the product an image or personality, (3) to give the brand an identity, (4) to bolster the company's image and reputation, and (5) to facilitate relationships with consumers that lead to long term value. When these goals are accomplished successfully and consumers see brands as similar to themselves (Malar et al., 2011) brands accumulate equity. Brand equity can be thought of as the marketing and financial value of a brand to the company arising from consumer awareness, their loyalty, quality perceptions, and other associations (Aaker, 1991, p. 17; Ferrell & Hartline, 2005, p. 177). Equity in turn leads to long run profitability and consumer advocacy of the brand to others.

Consumers contribute to the success of brand strategy and brand equity because brands are important to them. First, consumers use brands to distinguish a company's offering from those of other companies; (2) this information allows them to make efficient judgments of quality, suitability, value and can prompt quick purchase; (3) consumers use brands to create and display self-image and identity; (4) consumers can interact with the brand and even co-create it; (5) consumers form relationships with the brand and consequently the company that they find satisfying; (6) brand help consumers establish and maintain social relationships (see Haugtvedt, Herr, & Kardes, 2008; Maehle, Otnes, & Supphellen, 2011; Walker, 2009). At the heart of the process by which managers create brand strategies and consumers participate in them, yielding a brand identity, brand equity, long term relationships, and perhaps brand advocacy, is the interaction of the brand's personality and the consumer's engagement with it (Goldsmith, 2011). Although how consumers invest brands with human-like characteristics is understood (Maehle et al., 2011), empirical links between brand personality and consumer brand engagement are few. It is important to show that the effort invested by managers and consumers into brand personality leads to the greater brand engagement that both parties desire.

Brand Personality

The concept of brand personality features prominently in influential descriptions of brand management and brand theory (e.g., Aaker, 1996; Keller, 2003; Haugtvedt et al., 2008). Brand personality is argued to play an important role in brand positioning (van Rekom, Jacobs, & Verlegh, 2006) and to play an essential role in brand attachment because consumers seek brands that reflect their self-images (Malar et al., 2011). Consequently, researchers have proposed self-report scales to measure brand personality as a set of aspects or dimensions (e.g., Aaker, 1996; Geuens et al., 2009). These scales differ in terms of the number and choice of adjectives they use. Although the fifteen-item Aaker scale is the most prominent, Geuens et al. (2009) critique it for its loose definition of brand personality and the non-generalizability and the non-replicability of its factor structure. In its place they propose a new, parsimonious brand personality measure consisting of 12 adjectives to operationalize personality dimensions (see Table 1). A search by Google scholar yielded 13 citations to this paper, none of which used it to assess relationships between brand personality and brand engagement, so the present study is one of the first studies of this topic. To verify the notion that brand personality is related to brand engagement and to partially validate the Geuens et al. (2009) scale, we propose the first hypothesis.

H1: Aspects of the brand personality scale are related to engagement with a specific brand (North Face), providing a profile of how the brand is viewed by engaged consumers.

Brand Engagement: Global and Specific

Consumers relate to brands in a variety of ways, and scholars use different terms for these relationships, such as brand resonance, brand love, brand commitment, brand loyalty, and brand involvement (Consumer Brand Relationship Colloquium, 2011). Keller (2001) makes brand engagement a key component of his Customer-Based Brand Equity model. Building systematically from the basic concept of brand salience, his model proposes that mangers can take specific steps to create brand equity by connecting with customers and making their brands relevant to their customers' lives. The final goal is an intense, active relationship between the brand and the customer, part of which is engagement with the brand expressed as customer eagerness to talk about the brand, learn about it, and exhibit its use (Goldsmith, 2011). The brand management literature is replete with recommendations and exhortations telling managers to encourage their consumers to become engaged with specific brands (e.g., Sullivan, 2009). Being engaged with a single brand, however, might also indicate a general to tendency to engage with other brands. Sprott et al. (2009) describe this general tendency and propose a multi-item self-report measure. We reason that being engaged with one brand is just one instance of this tendency, part of a larger pattern for some consumers. This link between single-brand engagement and global brand engagement has not been investigated, so we propose the second hypothesis, a positive (albeit weak) relationship between single- and global-brand engagement.

H2: Engagement with a specific brand is positively related to brand engagement in self-concept (global brand engagement).

METHOD

Procedure and Participants

We collected the data using an online survey of college students enrolled in Human Sciences classes at a large southeastern U.S. university. Although this is a convenience sample with considerable demographic homogeneity, the participants are members of the target segment for this brand, have good experience purchasing their own clothing, and represent both current and future customers for North Face. Walker (2009, p. 103) reports that teens, not far in age from our sample, have roughly 145 conversations about brands a week. Although the nature of the sample limits the generalizability of the point and interval estimates, the focus was on theory testing and not providing a description of the target segment, and so constitutes a realistic source of data (Highhouse & Gillespie, 2009).

The students were directed by email to an online survey site where they completed the questionnaire for extra class credit. Anonymity was guaranteed by not associated their identity with their responses. The focal brand was North Face clothing. We chose this brand after discussions with students determined that it was widely recognized, suitable for both men and women, and reasonably priced so as not to be seen as too cheap or too expensive to be a realistic clothing choice. The questionnaire contained an item asking how familiar the participants were with North Face. The majority reported that it was either Very Familiar (27%) or Somewhat Familiar (52%), which only 13% reported that it was Somewhat Unfamiliar and only 8% said it was Very Unfamiliar. Interestingly, we asked the participants to record their most favorite brand, second most favorite, and third most favorite brand of clothing, and counted a total of 366 responses. Not a single participant reported North Face among the many different brands mentioned. Free People, Forever 21, and BCBG placed the most mentions across the three categories. Apparently, North Face is a well known brand with a unique personality, but not a favorite among this sample of consumers.

The sample consisted of 126 women and 6 men, reflecting the demographics of the students in this college. The effective sample size of 132 yielded at least 10 observations per independent variable in the main regression analysis and provided sufficient statistical power to detect a bivariate correlation of at least .20 with $p < .05$. The age of the participants ranged from 18 to 34, with a mean of 20.9 years (SD = 2.3) and a median of 20 years.

Measures

We designed the study to assess the relationship between brand personality and brand engagement. We used existing scales to operationalize the constructs (see Table 1). To test H1, the dependant variable, engagement with the North Face brand, was measured by a six-item scale described by Keller (2001). A 7-point Likert response format was used where 1 = Strongly Disagree and 7 = Strongly Agree. The principal independent variable, brand personality, was measured using the 13 adjectives proposed by Geuens et al. (2009) as a parsimonious, comprehensive measure. Survey participants evaluated North Face for each adjective using 7-point response format where 1 = Not characteristic for the brand at all and 7 = Very characteristic for the brand. If the adjectives in Geuens et al. (2009) brand personality scale are not related to engagement with a specific brand, it is hard to see how it validly operationalizes a concept (i.e., brand personality) in a way that is useful to either managers or researchers. To measure global-brand engagement and test H2, we used the Brand Engagement in Self-Concept (BESC) scale developed by Sprott et al. (2009). BESC describes an individual difference variable that represents how much consumers use brands to form and project their images of self (Sprott et al., 2009). We were interested in how engagement with a specific brand is related to engagement with brands in general.

TABLE 1
ITEMS USED TO OPERATIONALIZE THE VARIABLES

Brand Personality (Geuens et al., 2009)

The North Face brand is:

. . . down to earth	. . . stable	. . . responsible
. . . active	. . . dynamic	. . . innovative
. . . aggressive	. . . bold	. . . ordinary
. . . simple	. . . romantic	. . . sentimental

North Face Engagement (Keller, 2001)

1. I really like to talk about North Face with others.
2. I am always interested in learning more about North Face.
3. I would be interested in merchandise with this brand's name on it.
4. I am proud to have others know I use this brand.
5. I like to visit the website for North Face.
6. Compared to other people, I closely follow news about this brand.

Brand Engagement with Self-Concept (Sprott et al., 2009)

1. I have a special bond with the brands that I like.
2. I often feel a personal connection between my brands and me.
3. I feel as if I have a close personal connection with the brands I most prefer.
4. I can identify with important brands in my life.
5. There are links between the brands that I prefer and how I view myself.
6. My favorite brands are an important indication of who I am.

(Five-point Likert scale.)

Clothing Involvement (Mittal & Lee, 1989)

1. I have a strong interest in clothing.

2. Clothing is very important to me.
3. For me, clothing does NOT matter.
(Five-point Likert Scale)

Shopping
I like to shop: 1 = strongly disagree, 2 = disagree, 3 = neither, 4 = agree, 5 = strongly agree
I think shopping is: 1 = very bad, 2 = bad, 3 = neither, 4 = good, 5 = very good
My skills as a shopper are: 1 = well below average, 2 = below average, 3 = average, 4 = above average, 5 = well above average
----

In addition, we included in the survey two additional scales. The first, a three-item clothing involvement scale (Mittal & Lee, 1989), measures a potential influence on the primary relationships between brand personality and brand engagement. Our reasoning was that the more consumers were involved with (excited by, interested in) clothing as a category, this influence might account for their engagement with North Face. Finally, we created a three-item scale to measure a variable we call "attitude toward shopping" so that we could assess its relationship with North Face engagement so as to reinforce the notion that specific-brand engagement (and this scale operationalizes this concept validly) is important to managers. To describe shoppers involved with North Face as highly involved with clothing and as frequent shoppers gives managers important insights for developing strategies to reach these consumers by revealing broader characteristics that could guide media selection and advertising themes. If not related, this is valuable information as well.

RESULTS

Preliminary Analysis

The first step in the data analysis was to purify the scales, evaluate their internal consistency, and assess discriminant validity. We used AMOS with maximum likelihood estimation to perform a confirmatory factor analysis (CFA) of the four multi-item scales: North Face brand engagement, clothing involvement, BESC, and shopping attitude. This initial model did not fit the data well owing to highly correlated errors for two BESC items. We removed these two redundant items and repeated the analysis. The results showed a model that did not have an outstanding fit, but was adequate to permit further analysis. This outcome was likely because of the relatively small sample size. The model fit statistics were: χ^2 on 129 df = 233.7, $p < .0001$, $\chi^2/df = 1.81$, NFI = .834, IFI = .918, TLI = .901, CFI = .917, SRMR = .077, and RMSEA = .079. Item loadings ranged from .486 to .977 with all t-values greater than 4.0.

The Construct Reliability (CR), Average Variance Extracted (AVE), and coefficient alpha coefficients (see Table 2) indicated adequate internal consistency with the exception of the attitude toward shopping scale, which is not involved in the hypotheses tests and so should still be adequate to indicate the managerial usefulness of the other findings. The correlations among the constructs appear in Table 2. The squared correlations are all smaller than their AVE's, indicating good evidence for discriminant validity (Fornell & Larcker, 1981) as do the 95% confidence intervals around the construct correlations, which did not contain unity. Consequently, we summed the items for each construct to form composite scores (see Table 2).

TABLE 2
DESCRIPTIVE STATISTICS OF NORTH FACE ENGAGEMENT, BESC, CLOTHING INVOLVEMENT, AND SHOPPING

Variable	Mean	Std Dev	CR	Alpha	NF	BESC	Cloth	Shop
North Face	20.21	8.1	.90	.90	(.60)	.07	.03	.09
BESC	21.8	4.6	.90	.89	.26**	(.60)	.07	.18
Involvement	13.6	1.9	.83	.81	.18*	.26**	(.64)	.22
Shopping	13.5	1.5	.67	.65	.30**	.34**	.47**	(.42)
Age	20.9	2.3			-.15	-.24**	-.33**	-.17**

Note: CR = Construct Reliability. Correlations in the lower triangle, AVEs on the diagonal, squared correlations in the upper triangle. * $p < .05$.

In the absence of a more strenuous test for common method bias, we used the Harman One Factor test (Podsakoff et al., 2003) by running an exploratory factor analysis on all the individual eighteen indicators and examined the un-rotated factor solution. Four factors with eigenvalues greater than 1.0 were extracted and one factor did not account for the majority of the covariance among the measures, providing some evidence for the absence of common method variance in the data.

Hypotheses Tests

We tested our first hypothesis, that aspects of brand personality are related to engagement with a brand, by correlating the North Face brand engagement scores with the 12 brand personality adjective ratings (see Table 3). Eleven of these are statistically significant at $p < .01$, although moderate in size. These results suggest that, as H1 hypothesized, differences in consumer perceptions of brand personality are associated with engagement with it. The results show that these consumers feel that North Face has a personality described as *responsible, not ordinary, sentimental, romantic, active, dynamic, bold, aggressive, simple, stable, down to earth*, and *innovative*. All these personality perceptions potentially promote engagement with the brand. Moreover, this information can inform promotional strategies for North Face.

TABLE 3
DESCRIPTIVE STATISTICS AND CORRELATIONS OF NORTH FACE PERSONALITY WITH NORTH FACE ENGAGEMENT

Variable Name	Mean	SD	Median	Range	Correlation
Responsible	4.83	1.4	5.0	1 - 7	.51**
Ordinary	4.68	1.6	5.0	1 - 7	-.31**
Sentimental	3.00	1.5	3.0	1 - 7	.37**
Romantic	1.91	1.2	2.0	1 - 7	.26**
Active	6.05	1.3	7.0	1 – 7	.30**
Dynamic	4.20	1.7	4.0	1 – 7	.43**
Bold	3.71	1.6	4.0	1 - 7	.39**
Down to Earth	5.24	1.4	5.0	1 - 7	.30**
Aggressive	3.48	1.6	4.0	1 – 7	.32**
Simple	5.41	1.3	6.0	1 - 7	-.10
Stable	5.42	1.4	6.0	1 - 7	.33**
Innovative	4.29	1.6	4.0	1 – 7	.41**

* $p < .05$ ** $p < .01$

To determine the multivariate association of the adjectives with North Face brand engagement, we regressed the latter across the 12 adjective ratings (see Table 4). The results show that only three of the personality dimensions, *responsible*, *not-ordinary*, and *sentimental*, have a statistically significant ($p \leq .05$) association with brand engagement when all 12 adjectives are considered at the same time ($R^2 = .46$). Thus, these three aspects of brand personality dominate engagement with North Face. This finding is also apparent when examining the part (semipartial) correlations in the regression analysis (see Table 4), which report the "unique" contribution of an independent variable to explaining the variance in a dependent variable. The squared semipartial correlation tells how much R^2 will decrease if that variable is removed from the regression equation. In this analysis, the adjectives responsible and ordinary account for the majority of R^2, indicating their unique contribution to explaining variance in North Face engagement. Scatter diagrams did not suggest any non-linear relationships between the adjectives and North Face engagement. A plot of the studentized residuals against the standardized predicted residuals showed that the analysis did not violate the homoscedasticity assumption because this plot was symmetrical about 0.0, indicating that the assumption was met; and no residual was larger than 3.0, indicating an absence of outliers.

TABLE 4
REGRESSION ANALYSIS

Independent Variable	B	t	*p*	Part[a]
Responsible	.318	3.28	.001	.222
Ordinary	-.290	-3.65	< .001	-.246
Sentimental	.170	1.98	.05	.134
Romantic	.102	1.26	.21	.085
Active	.098	1.04	.30	.070
Dynamic	.093	1.00	.32	.068
Bold	.074	.777	.44	.052
Down to Earth	.061	.677	.50	.046
Aggressive	-.053	-.61	.54	-.041
Simple	.046	.439	.66	.030
Stable	-.005	-.05	.96	-.003

Note: $R^2 = .457$, $_{Adj.}R^2 = .402$, df = 119, F = 8.33, $p < .001$. [a] The part coefficient shows the unique effect of the independent variable on the dependent variable.

To test the second hypothesis, that Brand Engagement with Self-Concept is positively related to engagement with North Face, we correlated BESC with engagement with North Face. These results (see Table 2) show that H2 is supported by the positive correlation (r = .26) between BESC and North Face Engagement. Both variables were negatively skewed, but data transformations did not change the results of the analysis. The modest size of the correlation, however, supports the notion that being engaged with a specific brand is not that same as being engaged with brands in general as a means of forming and expressing self-concept. The one concept should not be substituted for the other either in applied or theoretical studies.

Subsequent Analyses

T-tests comparing the mean familiarity scores of the 104 participant who were very or somewhat familiar with North Face with the 28 who were somewhat or very unfamiliar with it showed that the former group reported a significantly higher level of North Face engagement (M = 21.3, SD = 8.1) than the latter (M = 16.1, SD = 6.8): $t_{(130)} = 3.1$, $p = .002$, Cohen's d = .55. The correlations in Table 2 of North Face engagement with clothing involvement and attitude toward shopping provide evidence for the importance of understanding specific brand engagement. These results help profile the engaged North Face buyer as one who is familiar with the brand, holds a specific image of the brand, but only mildly involved with clothing as a category (r = .18) and who likes to shop (r = .30).

Finally, we factor analyzed the 12 adjective ratings using principal axis factor analysis followed by an oblique rotation. This analysis produced a three factor solution in contrast to the five-factor solution reported by Geuens et al. (2009). Our results showed that the adjectives *ordinary* and *simple* loaded on a unique factor labeled “simplicity” by Geuens et al., as did *sentimental* and *romantic* (labeled “emotionality”), but that the remaining adjectives formed one factor instead of the two labeled by Geuens et al. as "responsibility” and “activity,” and the adjective *aggressive* cross-loaded almost equally on both these factors, positive on the responsibility/activity dynamic factor and negatively on the emotionality factor. It is possible that the small sample size used here compared with the large sample used by Geuens et al. could have accounted for our failure to replicate their structure exactly. Alternatively, this contradictory finding suggests that the structure of a brand's personality may vary from brand to brand so that the search for a "stable" factor structure across brands is not likely to have a final answer.

DISCUSSION

The purpose of the present study was to assess empirically the association between brand personality and brand engagement that so many branding researchers propose (e.g., Aaker, 1997; Geuens et al., 2009; Grisaffe & Nguyen, 2011; Maehle et al., 2011). To test this hypothesis we measured brand personality and brand engagement for the North Face clothing brand. The results confirm that aspects of brand personality are related to brand engagement, confirming the hypothesis. We found that 11 of 12 adjectives comprising the Geuens et al. (2009) brand personality scale were significantly associated with a measure of brand engagement for North Face. Of these, two in particular, *responsible* and *not ordinary* were the most important in differentiating levels of brand engagement. We feel these findings have important theoretical, managerial, and methodological implications.

Theoretically, the results confirm the proposed association between brand personality and brand engagement that is felt to be an important explanation for how consumers become attached to specific brands. The argument is that because in so many product categories brands are manufactured to have equivalent quality standards and provide similar levels of utilitarian benefits, marketers must rely on their brand images to distinguish them from each other and to attract consumers to specific brands. Managing brand personality is a principal way in which they do this (Grisaffe & Nguyen, 2011). Consumers seem to prefer brands with distinct personalities, probably because they can identify with the brand and use it to express their own personality (Maehle et al., 2011). By showing specifically which aspects of the North Face brand are associated with engagement, this study demonstrates this psychological linkage. Note, however, that we did not measure the individual self-images of our consumers and so must only assume that those who are more engaged with North Face do so because they find similarities between its personality and their own personalities and values. Qualitative studies (Maehle et al., 2011) suggest that the human-like characteristics marketers imbue into their brands do lead to emotional bonds with consumers. In the absence of an experimental study, however, we cannot definitely conclude that the differences in brand personality we assessed cause differences in brand engagement.

Mangers should benefit from these findings in general because they demonstrate the usefulness of the Brand Personality Scale as a way to determine how consumers view their brand and use the findings to promote brands that play to the strengths of a brands personality. For example, in the case of North Face, promoting it through advertising, sponsorships, event marketing, and cause brand alliances in ways that highlight the responsible and non-ordinary character of the brand should reinforce engagement with it. The results also suggest to North Face managers that their brand scores very high on the adjectives, active, stable, simple, and down to earth. This constellation of aspects gives a very distinctive and positive platform on which to build and extend the brand’s image. It is interesting to note that the two most determinant aspects of the brand’s personality, responsible and not ordinary (Table 4), were not the most highly rated characteristics of it (Table 3), suggesting that North Face might benefit from making additional efforts to associate these characteristics with the brand.

Finally, from the methodological perspective, ours is one of the first studies to use the Geuens et al. (2009) scale. The findings clearly support its usefulness in assessing this brand's personality, suggesting further use in both theory testing and managerially focused studies. Its ease of use and simplicity recommend it, as does the coherence of its results. Thus, we accomplish the first goal of contributing to the validity of this new scale. However, the failure to reproduce the same factor structure suggests further studies are needed.

The secondary purpose of the study was to investigate the relationship between a specific measure of brand engagement and a general measure in order to assess whether these two concept are distinct although scores on one scale should be correlated if only weakly with scores on the other. General brand engagement, in this case Brand Engagement in Self-Concept (Sprott et al., 2009) was related weakly to engagement with North Face, verifying the second hypothesis and the concepts' discriminant validity. Both measures of these concepts proved to have good psychometric characteristics and should prove useful to future research.

Our study is limited in several ways. Although our convenience sample was appropriate for the purpose of the study, it was small and homogeneous, obviating the ability to generalize its point and interval estimates to a larger population. The study focused only on one brand, thereby limiting the generalizability of the findings to other brands, suggesting that future studies need to verity the principle using different brands. The conclusions cannot be expressed in causal terms because they derived from survey and not experimental data. The next step in this research program should be to use experiments to test rigorously the hypotheses for their causal validity.

In conclusion, the study successfully showed that brand personality is related to brand engagement for a specific brand. The results contribute to the overall investigation of this topic and suggest avenues for future study. The personality profile of each brand is different. The cumulative findings of many similar studies, however, should greatly enrich our understanding of the use of marketing strategy to create these unique profiles. More attention should be given to understanding how consumers interact with marketing strategy to co-create the brand's personality, identity, and meaning. This understanding will improve the effectiveness of branding theory overall, lead to more and better long term relationships, to increased profitability, for firms, and to individual consumer satisfaction, all worthy goals. .

REFERENCES

Aaker, D.A. (1991). *Managing Brand Equity*. New York: The Free Press.

Aaker, D.A. (1996). *Building Strong Brands*. New York: The Free Press.

Aaker, J.L. (1997). Dimensions of Brand Personality. *Journal of Marketing Research*, 34, (3), 347-356.

Birkner, C. (2011). Lifestyle Brands Make It PERSONAL. *Marketing News*, 45, (2), 22.

Consumer Brand Relationship Colloquium (2011). Third international Colloquium on Consumer-Brand Relationships, Rollins College, March 17-19, 2011, Orlando, Florida.

Goldsmith, R.E. (2011). Brand Engagement and Brand Loyalty. In Avinash Kapoor & Chinmaya Kulshrestha (Eds.), *Branding and Sustainable Competitive Advantage: Building Virtual Presence* (pp. 121-135), Hershey, PA: IGI Global.

Haugtvedt, C.P., Herr, P.M., & Kardes, F.R. (2008). Brands and Their Meaning Makers. In C.P. Haugtvedt, P.M. Herr, & F.R. Kardes (Eds.), *Handbook of Consumer Psychology* (pp. 781-821). New York: Psychology Press.

Highhouse, S. & Gillespie, J. (2009). Do Samples Really Matter That Much? In C.E. Lance & R.J. Vandenberg (Eds.), *Statistical and Methodological Myths and Urban Legends* (pp. 247-265). New York: Routledge.

Ferrell, O.C. & Hartline, M.D. (2005). *Marketing Strategy* (3rd ed.). Mason, OH: Thompson South-Western.

Fornell, C. & Larcker, D.F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18, (1), 39-50.

Geuens, M, Weijters, B., & De Wulf, K. (2009). A New Measure of Brand Personality. *International Journal of Research in Marketing*, 26, (2), 97-107.

Grisaffe, D.B. & Nguyen, H.P. (2011). Antecedents of Emotional Attachment to Brands. *Journal of Business Research,* 64, (10), 1052-1059.

Keller, K.L. (2001). Building Customer-Based Brand Equity: A Blueprint for Creating Strong Brands. *Marketing Science Institute, Working Paper* (01-107).

Keller, K.L. (2003). *Strategic Brand Management*. Upper Saddle River, NJ: Prentice Hall.

Kotler, P. (2000). *Marketing Management: The Millennium Edition*. Upper Saddle River, NJ: Prentice Hall.

Maehle, N., Otnes, C., & Supphellen, M. (2011). Consumers' Perceptions of the Dimensions of Brand Personality. *Journal of Consumer Behaviour*, *10*(5), 290-303.

Malar, L., Krohmer, H., Hoyer, W.D., & Nyffenegger, B. (2011). Emotional Brand Attachment and Brand Personality: The Relative Importance of the Actual and the Ideal Self. *Journal of Marketing*, 75, (4), 35-52.

Mittal, B. & Lee, M-S. (1989). A causal model of consumer involvement. *Journal of Economic Psychology*, 10, 363-389.

Podsakoff, P.M., MacKenzie, S.B., Lee, J.-Y., & Podsakoff, N.P. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *Journal of Applied Psychology*, 88, (5), 879-903.

Sprott, D., Czellar, S., & Spangenberg, E. (2009). The Importance of a General Measure of Brand Engagement on Market Behavior: Development and Validation of a Scale. *Journal of Marketing Research*, 46, (1), 92-104.

Sullivan, E.A. (2009). Engage Your Target. *Marketing News*, 43, (4), 20.

van Rekom, J., Jacobs, G., & Verlegh, P.W.J. (2006). Measuring and Managing the Essence of a Brand Personality. *Marketing Letters*, 17, (3), 181-192.

Walker, R. (2009). *Buying In*. New York: Random House.

The Effect of Interpersonal Counterproductive Workplace Behaviors on the Performance of New Product Development Teams

Tianjiao Qiu
California State University, Long Beach

Benjamin Steven Peschek
California State University, Long Beach

This research aims to investigate how interpersonal counterproductive work behaviors impact new product development team performance through teamwork. Specifically, we address two aspects of team work: team trust and team learning. Analyzing survey responses from 26 student teams with hierarchical linear modeling techniques, we demonstrate that team members' interpersonal misbehaviors lead to lower levels of emotional integration and less sharing and acquiring of new knowledge within the team. Furthermore, interpersonal misbehaviors are not only detrimental to effective team collaboration process, but also directly influence the success of new product development projects.

INTRODUCTION

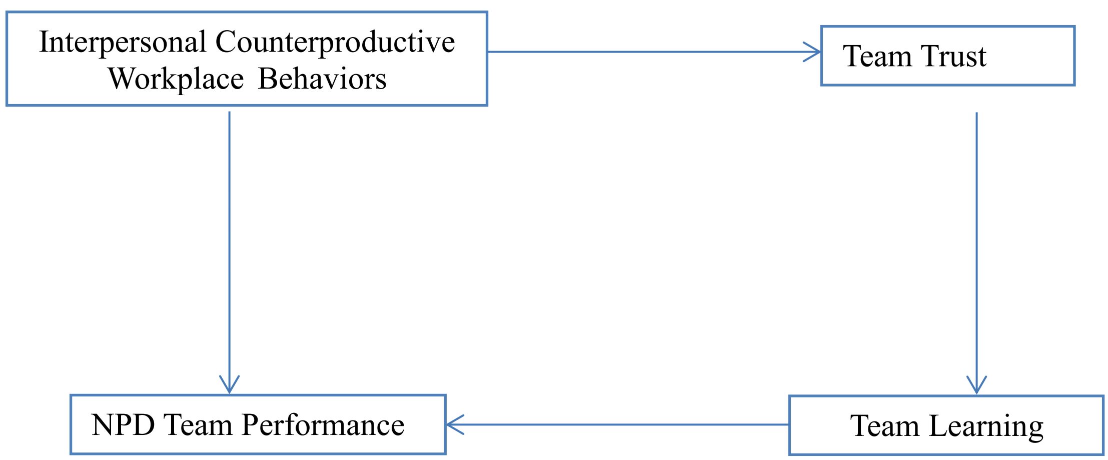
New product development (NPD) teams are commonly adopted in organizations to optimize NPD process, rather than assigning projects to individuals solitarily (e.g., Brockman, Rawlston, Jones, & Halstead, 2010). Integrated product development is dependent upon how team members work together toward a common goal. The complex NPD process (including discovery, development, testing and launch) is inherently a group process, which requires the concerted efforts of all team members (e.g., Qiu, Qualls, Bohlmann, & Rupp, 2009). Any single team member who works in isolation will be at a disadvantage compared to a team of individuals who can utilize the entirety of the team members' contributions.

The increased need for teamwork has received wide attention in current research (Bstieler & Hemmert, 2010). One main stream of research focuses how cross-functional integration influences NPD success (e.g., Qiu et al., 2009). Another stream of research addresses the leadership role in promoting NPD performance through better coordination (e.g., Sarin & McDermott, 2003). However, despite the fruitful findings on the positive factors to generate success in NPD teams, little research has explored the dysfunctional aspect of team interactions. Dysfunctional, or counterproductive, workplace behaviors (CWBs) refer to the team members' acts that are intended to undermine the group efforts. Researchers have identified two major hierarchical subcategories of CWBs based on the behaviors' target: organizational CWBs and interpersonal CWBs. Previous research has mainly focused on examining the factors that influence the likelihood of CWBs occurrence, such as individual factors, situational factors, and organizational structures. For example, gender has been found to be a factor of CWBs, with males more likely to report engaging in them than females (Salami, 2010). Chi-Ko Kwok, Wing, and Ho (2005) suggested that an increase in formal normative control, defined as the regulations of an organization or the superordinate presiding over the individual, leads to a reduction in counterproductive behavior.

While the antecedents of CWBs have received wide attention in previous research, the empirical examinations of how CWBs, especially interpersonal CWBs, impact small group interaction and effectiveness are scarce. Our present study aims to fill the research gap by examining how interpersonal CWBs impact NPD team performance through two aspects of teamwork: team trust and team learning. Specifically, we examine two key issues: (1) What is the relationship between interpersonal CWBs and the performance of NPD teams? And (2) how do team trust and team learning work together to mediate the above relationship?

We developed a conceptual model (see Figure 1) and collected data from 98 undergraduate senior business majors from two large public universities in the Midwest area. We then used hierarchical linear modeling techniques to empirically test the model. Our results demonstrate that team trust mediates the relationship between interpersonal CWBs and team learning, which in turn significantly impacts the performance of NPD teams.

FIGURE 1
THE CONCEPTUAL MODEL



In the subsequent sections, we present our theory and hypotheses on the effect of interpersonal CWBs on the performance of NPD teams. We then discuss the sampling procedure, the empirical test, and the findings. Finally, we discuss the implications of our study and the potential avenues for future research.

LITERATURE REVIEW AND HYPOTHESES

Counterproductive Workplace Behaviors (CWBs)

Detrimental CWBs have long been examined along with positive organizational citizenship behaviors (OCBs) (e.g., Sackett, Berry, Wiemann, & Laczo, 2006). OCBs are the prosocial behaviors members engage in that go beyond what is explicitly required by the organization that are within the organization's interest (Venkataramani & Dalal, 2007). Examples of this are brewing coffee for other members of the organization or offering encouraging advice to another member about a company project. Conversely, CWBs are deviant behaviors that lead to inefficiency and financial costs to the organization (Lanyon & Goldstein, 2004). Examples of this are illicit drug use, negligence, or blatant theft.

Although the types of behaviors that can be classified as CWBs are quite varied and fall under a broad definition in the research literature (Sackett et al., 2006; Fisk, 2010), research has shown that, in general, these behaviors often violate organizational norms and affect organizational effectiveness, damaging the long-term goals of all involved (Lau, Au, & Ho, 2003). Generally speaking, CWBs are detrimental to the individuals within the organization and to the organization itself when individuals behave in ways that are deleterious to the organization's interests. Marcus and Schuler (2004) establish three criteria that need to be fulfilled in order for an act to be considered as a CWB: (a) The act must be volitional, regardless of the intention of harm committed during the act, (b) there must be a potential for harm by engaging in the act, though it may not be recognized by the individual prior to the act being committed, and (c) the act is against the legitimate interests of the organization.

Various explanations have been given in previous research literature as to why CWBs occur. Mangione and Quinn (1975) suggested that they could be the result of job dissatisfaction, though this was only supported in a limited population. Kelloway, Francis, Prosser, and Cameron (2010) suggested that they occur as a result of dissatisfaction with the organization itself, culminating as a form of protest against the organization through CWBs. Bechtoldt, Welk, Zapf, and Hartig (2007) suggested CWBs occur as a result of the individual's perceptions of his or her job demands, such as whether tasks are viewed as challenging or as hindrances. These are certainly not exhaustive, but give an idea of the variation in the research literature suggesting factors that may cause CWBs.

Interpersonal CWBs

Although researchers have shown that not a single factor or framework is likely to be explainable as the cause of CWBs, they have commonly agreed that there are two main types of CWBs based on the target of the misbehaviors: organizational and interpersonal (Robinson & Bennett, 1995). CWBs targeted toward organizations, that is, organizational CWBs, result in costs to the organization by way of fraud, failure to meet deadlines, and poor quality work (Aube, Rousseau, Mama, & Morin, 2009). They can also lead to negative organizational outcomes such as time wasting, sabotage, and vandalism (Lanyon & Goldstein, 2004). Those negative organizational outcomes may be circumvented by employing better systems, supervisors, and structures (Lanyon & Goldstein, 2004).

Interpersonal CWBs, on the other hand, are predominately directed toward other individuals and are observed in actions such as retaliations, sabotage, revenge, personal theft, and aggression (Cohen-Charash & Mueller, 2007). They are voluntary behaviors that lead to negative relational outcomes in other members, such as increased frustration, humiliation, and aggression (Ayoko, Callan, & Hartel, 2003), which in turn may have a moderating effect on job performance (Aube et al., 2009).

Robinson and Bennett (1995) developed a typology of CWBs that differentiates interpersonal CWBs from organizational CWBs. In this typology, interpersonal CWBs are distinguished from organizational CWBs through the inclusion of political deviant behaviors, such as favoritism, gossiping, and non-beneficial competition, as well as serious personally aggressive behaviors, such as sexual harassment, verbal abuse, and stealing from and endangering other co-workers (Robinson & Bennett, 1995). Lim and Cortina (2005) further distinguished between interpersonal CWBs that were deemed milder, such as emotional abuse, bullying, social isolation, and incivility, with interpersonal CWBs that were deemed more extreme such as sexual harassment.

Research has demonstrated that a number of factors can lead to the various forms of interpersonal CWBs described above. For example, interpersonal CWBs can result from perceived unfairness or envy by the individual (Cohen-Charash & Mueller, 2007). Emotions can also influence the incidence of interpersonal CWBs (Levine, 2010). While guilt and shame generally lead to self-destructive CWBs, anger and frustration generally lead to retaliatory CWBs (Martinko, Gundlach, & Douglas, 2002). They may also be heavily influenced by the amount of stress one experiences at work, as well as the degree to which the social norms and organizational structure of the workplace fail to prevent such behavior (Spector et al., 2006).

Individuals may engage in CWBs in an attempt to induce balance and achieve fairness within the organization (Cohen-Charash & Mueller, 2007). There may be a strong element of self-expression leading to "venting" behaviors that are directed at other co-workers, implying a cognitive process evident in the CWB-acting individual (Lee & Allen, 2002). Being a victim of mistreatment in the organization can also result in CWB retaliatory behaviors, such as social retaliation victimization, which includes harassment, ostracism, name-calling, and threats (Cortina & Magley, 2003). There are many other influences that lead to interpersonal CWBs, such as high competition, dissatisfaction with the social climate, poor communication, and power imbalances, among others (Salin, 2003). Physical forms of CWBs focus on other individuals, are rare, and are mostly represented in forms of psychological aggression (Spector et al., 2006).

Interpersonal CWBs and Team Trust

The importance of conducting research on group interactions in the workplace has increased along with the increase in the utilization of group-based projects (Jackson, Colquitt, Wesson, &Zapata-Phelan, 2006). This means that the performance of individuals is not as important as their performance as members within a group. Collaborating with one another leads to a psychological collectivism, defined as "a syndrome of behaviors and related to interpersonal concern" (Hui & Yee, 1999). These include the consideration of others within the group, sharing resources with other members, and working towards a single outcome (Ayoko et al., 2003).

Team trust reflects a team member's confidence in the competence and dependability of other team members from both affective and cognitive perspectives (McAllister, 1995). Team trust from the cognitive perspective is built on rational knowledge that contributes to trust decisions, while team trust from the affective perspective focuses on emotional bonds and concern for others. Affect-based relationships are the emotional connections shared between group members, where team members are concerned with each other's shared interests. Cognitive-based relationships refer to the traits that are related to the performance of the group such as responsibility, reliability, and dependability, which form the basis for trust (McAllister, 1995). Team trust is important in team interactions because it leads to a greater flow of information sharing between members at the risk of leaving oneself vulnerable to other members (Curseu & Schrujier, 2010).

Empirical evidence from the social-psychological literature on trust suggests that trust is built upon cooperative interactions and reciprocity. Cooperation and coordination have been shown to increase trust between team members, which then positively impacts their commitment to the team through the recognition that their efforts are being appreciated (Sheng, Tian, & Chen, 2010). In contrast, interpersonal CWBs generate negative attitudes and feelings within a team, such as stress and suspicion about dependability. Team members who engage in interpersonal CWBs leave their teammates feeling vulnerable, both personally and towards the completion of the team goals. When individuals recognize that others in the group are engaging in CWBs that are impeding the group's progress to its shared goals and potentially harming the individual themselves, it negatively affects their trust in the other members. This decline in trust leads to less information shared between team members, trust declines, leading to even less information being shared, setting the team on a negative feedback cycle. Therefore, we suggest:

Hypothesis 1: Interpersonal CWBs have a negative relationship with team trust.

Interpersonal CWBs and Team Learning: Team Trust as a Mediator

Team learning is defined as the behaviors in which group members engage in an effort to combine task-relevant knowledge through interacting with one another (van Emmerik, Jawahar, Schreus, & de Cuyper, 2011). Team trust, reflected in reciprocity of affection and confidence in peer dependability, helps to facilitate the ongoing process at the team level that enables team members to acquire, share, and combine knowledge through group interactions. Because individuals are vulnerable when working as part of a team due to the flow of information between team members (Curseu & Schrujier, 2010), having trust in the team improves the sharing of information. When more individuals feel trustful of one another, they will be more likely to share knowledge and engage in more uniform team learning behaviors. As team members learn to trust one another, they will also cooperate to a greater degree and be more likely to share new insights and expertise with the group (Edmondson & Nembhard, 2009).

Trust facilitates the amount of information sharing between team members, allowing the group to collectively learn together. Positive climates breed a "psychological safety", an environment where the individual feels comfortable and valued (Edmondson, 1999). Edmondson, Dillon, & Roloff (2008) have found that incremental team learning was superior to radical learning, akin to slowly building up trust rather than over-volunteering information. Furthermore, team trust was found to influence team learning (Edmondson, 1999). This is achieved through at least one of five modes: (a) increased help-seeking, (b) increased feedback-seeking, (c) increased speaking up about errors, (d) increased innovative behaviors, and (e) boundary spanning (Edmondson, 1999). Failure to increase trust between groups may initiate various types of incomplete team learning cycles, including situational learning (the individual adapts to solve the problem, but does not learn to incorporate it within the larger organization), fragmented learning (the individuals learn, but the organization does not), or opportunistic learning (actions are taken based on an individual's actions, rather than the organization's goals) (Kim, 1993). Therefore, we suggest:

Hypothesis 2: Team trust mediates the relationship between interpersonal CWBs and team learning.

Team Learning and NPD Team Performance

The team learning process provides benefits for individuals such as learning new insights, expertise, skills, jargon, becoming adept at forming future teams, navigating social networks, and increasing communication skills (Edmondson & Nembhard, 2009). van Emmerik et al. (2011) have found that team learning is much higher in groups that are composed of individuals who are more similar to one another in terms of their attitudes, beliefs, and values, than in groups that are comprised of individuals who are different from one another in those areas.

Team learning enables effective knowledge dissemination, acquisition and new idea generation, which not only boost the morale of the team, but also contribute to the quality of NPD projects (Edmondson & Nembhard, 2009). Learning facilitates the individual's sharing of knowledge and allows team members to come closer together. When members have entered into a "psychological collectivism" by becoming sufficiently bonded within the team, individuals gain several benefits associated with being part of an "in-group", such as higher self-esteem and feeling more satisfied (Jackson et al., 2006; Hui, Yee, & Eastman, 2008). This shared knowledge then helps the team accomplish the tasks that could not be accomplished as quickly by individuals or disparate members. Therefore, we suggest:

Hypothesis 3: Team learning has a positive relationship with NPD team performance.

Interpersonal CWBs and NPD Team Performance

The detrimental effect of interpersonal CWBs on the quality of work has been found to be amplified in small group settings where employees have to work closely with potentially disrespectful and aggressive coworkers (Yang, 2008). Furthermore, interpersonal CWBs may directly impact team performance since individual team members can be discouraged to voice their input because of the fear of CWBs targeted at them (Spector et al., 2006). The loss of the contributions of other team members increases the burden for the remaining team members to accomplish more tasks. CWBs may also impact the results of team performance even more directly through means of sabotage or theft (Cohen-Charash & Mueller, 2007). Working environments with more interpersonal CWBs increase the amount of anxiety and/or stress that detracts from the exchange of information between team members and their combined overall team performance (Rodell & Judge, 2009). CWBs also prevent contrasting organizational citizenship behavior, which provide positive benefits that are synergistic for the team and its performance (Venkataramani & Dalal, 2007). Therefore, we suggest:

Hypothesis 4: Interpersonal CWBs impact NPD team performance directly beyond the effects of two mediators: team trust and team learning behavior.

METHODS

Sampling and Data Collection Procedure

We collected data from undergraduate senior business majors from two large public universities in the Midwest to test our model. The students were enrolled in NPD courses and were randomly assigned to three, four or five person teams. The course required the product teams to follow a stage-gates process, including idea screening, building a business case, development, and testing and launching stages, in order to develop detailed and actionable new product solutions to project ideas provided by corporate sponsors (Ettlie & Elsenbach, 2007). The components of the new product plan include not only product ideas but also actionable business plans for test marketing the new product. At the end of the semester, each team was required to submit the written new product plan and present the new product plan before the whole class and corporate sponsors. The faculty advisors then provided evaluations scores on each team based on the consideration of the written new product plan, the presentation, and feedbacks from both corporate sponsors and student audiences.

Data was collected via a paper and pencil survey before the teams received their evaluation scores from the faculty advisors. Valid data came from twenty-six NPD teams consisting of a total of ninety-eight undergraduate senior business majors. Among them, nine teams were three-member teams, fourteen teams were four-member teams, and three teams were five-member teams. Sixty-eight participants were female and thirty-one participants were male. Eight-six participants had full-time or part-time business work experience.

Measures

The survey contained measures of each team member's interpersonal CWBs, team trust, team learning, and self-report team performance. The measures were adapted from previously established scales. The measures of interpersonal CWBs, team trust, and team learning used 5-point Likert scales, with response options ranging from 1 = "strongly disagree" to 5 = "strongly agree". Specifically, we measured interpersonal CWBs by adapting Bennett and Robinson's (2000) 7-item interpersonal deviance scale. The scale measures the individual team member's behaviors that threatened the well-being of his or her teammates. The final measure contains all 7 items, with a reliability level of .72. The following is a sample item: "I acted rudely toward teammates." We adapted McAllister's (1995) interpersonal trust scale to measure each team member's trust toward his or her teammates. The final scale contains 6 items, with a reliability level of .90. The following is a sample item: "We have a sharing relationship. We can both freely share our ideas, feelings, and hopes." We adapted Edmondson's (1999) team learning scale to measure the extent to which team members seek and acquire new knowledge through team interactions. The final scale contains 6 items, with a reliability level of .73. The following is a sample item: "We regularly take time to figure out ways to improve our team's work processes."

We used both team members' self-report rating of team performance and faculty advisors' evaluation scores to measure team performance. The self-report rating was based on Sethi, Smith, and Park's (2001) team performance scale, which examines team performance from 5 perspectives: team morale, team efficiency, goal attainment, team reputation, and project quality. It is a 5-point Likert scale, ranging from 1 = "far below expectations" to 5 = "far above expectations." The reliability level is .91. Faculty advisor scores were based both on faculty advisors' and corporate sponsors' qualitative evaluation on "the degree to which the product provides a competitive advantage" (Griffin & Hauser, 1996).

We also set team members' gender, team members' ethnicity, and team size as our control variables in testing our model since previous research has demonstrated that individual factors and situational factors may have confound effects on CWBs (e.g., Salami, 2010).

We conducted confirmatory factor analysis (CFA) with the Amos 18 program in the SPSS software to assess the construct validity and the unidimensionality of the multi-item scales before our hypothesis testing (Anderson & Gerbing, 1988). The confirmatory factor analysis of the four-factor (interpersonal CWBs, team trust, team learning, and team performance) model showed satisfactory statistics (RMSEA = .06; CFI= .98; and NFI= .90). The chi-square for the four-factor model was insignificant ($x^2 = 63.86$, $df = 50$), which showed a good model fit. Each indicator demonstrated significant loadings ($p < .01$) on its corresponding latent variable. We then compared the fit of the unconstrained four-factor model with the fit of alternative models in which one or more covariances between latent variables were set equal to one. The unconstrained model showed the best statistics and fit the data better than all alternative models. The findings provide strong support for the construct and discriminant validity of the measurement model.

RESULTS

Because social interactions among team members during the new product project made them more homogeneous than randomly sampled individuals, the data obtained in the study were not fully independent. Therefore, we adopted hierarchical linear modeling (HLM) to address this nesting effect and tested for both within and between level effects. HLM involves the examination of multi-level variance: both the individual-level and the team-level at the same time, which allows the retention of variance of individual responses and simultaneous analysis of team-level variance.

Table 1 displays the means and inter-correlations among level 1 variables.

TABLE 1
DESCRIPTIVE STATISTICS AND CORRELATIONS

			Correlation					
Construct	Mean	S.D.	CWB	TT	TL	TP	GE	ET
Interpersonal CWBs (CWB)	1.50	.56						
Team trust (TT)	4.14	.82	-.53 **					
Team learning (TL)	3.70	.73	-.40 **	.51 **				
Team performance (TP)	3.82	.78	-.56 **	.59 **	.67 **			
Gender (GE)	1.69	.47	-.21	.26 *	.37 **	.29**		
Ethnicity (ET)	1.23	.82	.25 *	-.23	-.18	-.13	-.13	
Team size (TS)	3.89	1.02	.09	-.30 *	-.02	-.06	-.18	-.11

(*p < .05; **p < .01)

We examined the interclass correlation before testing the model. Specifically, we first used a null model, an intercept-only model with no predictors specified, to examine the between-group variance in team performance and within-group team member variance. We found that the between-group variance (τ^2) in team performance was .27, while the variance between members in the same team (δ^2) was .35. The interclass correlation coefficient $\frac{\tau^2}{\tau^2+\delta^2}$ was .44, indicating that 44% of variance in team performance resides between groups. This result indicated that the group effect is not ignorable and the variance should be examined both at the individual-level and at the team-level using HLM.

We followed the steps suggested by Baron and Kenny (1986) to test the presence of mediating effects in our multi-level model. Specifically, we set up five linear mixed equations to test the hypothesized relationships and examined the mediating effects of team trust and team learning in the relationship between interpersonal CWBs and team performance. Equation 1 examined the effect of interpersonal CWBs on team performance. Equation 2a and 2b examined the effect of interpersonal CWBs on the two mediators: team trust and team learning. Equation 3 examined the effects of interpersonal CWBs and team trust on team learning. Equation 4 examined the effects of interpersonal CWBs, team trust, and team learning on team performance.

Table 2 contains a summary of the parameter estimates $(\gamma's)$, between group variance ($\hat{\tau}$), within group variance ($\hat{\delta}^2$), and the global fit statistics (-2 loglike and AIC) of the linear mixed equations.

Equation 1 showed a significant negative effect of interpersonal CWBs ($\gamma = -.63$ p <.01) on team performance. The finding suggested that there is an effect between interpersonal CWBs and team performance that may be mediated.

Equation 2a and 2b treated the two mediators—team trust and team learning—as the outcome variables and examined the effects of interpersonal CWBs on the two mediators. The findings demonstrated that interpersonal CWBs significantly impact team trust ($\gamma = -.66$ p <.01) and team learning ($\gamma = -.41$ p <.01). Therefore, hypothesis 1 was supported.

TABLE 2
THE EFFECT OF CWB ON THE PERFORMANCE OF NPD TEAMS

Equation	Fixed Effects			Random effects				Fit statistics	
				Between		Within			
		γ 's	(SE)	$\hat{\tau}$	(SE)	$\hat{\delta}^2$	(SE)	-2 loglike	AIC
1.	Int.	4.35**	(.53)	.11	(.06)	.22	(.05)	116.0	130.0
	CWB	-.63**	(.13)						
	GE	.42*	(.16)						
	ET	.00	(.07)						
	TS	-.07	(.09)						
2a.	Int.	5.71**	(.57)	.02	(.06)	.41	(.09)	138.4	152.4
	CWB	-.66**	(.15)						
	GE	.18	(.18)						
	ET	-.11	(.09)						
	TS	-.18*	(.08)						
2b.	Int.	3.66**	(.54)	.00	.	.39	(.07)	132.5	144.5
	CWB	-.41**	(.14)						
	GE	.45	(.17)						
	ET	-.10	(.08)						
	TS	-.01	(.08)						
3.	Int.	1.57	(.79)	.00	.	.33	(.06)	121.6	135.6
	CWB	-.17	(.15)						
	TT	.36**	(.11)						
	GE	.39*	(.16)						
	ET	-.02	(.08)						
	TS	.06	(.07)						
4.	Int.	2.13**	(.64)	.04	(.04)	.17	(.04)	89.4	107.4
	CWB	-.41**	(.12)						
	TT	.17	(.09)						
	TL	.41**	(.09)						
	GE	.12	(.14)						
	ET	.04	(.06)						
	TS	-.04	(.07)						

(*p < .05; **p < .01)

Equation 3 treated team learning as the outcome variables and examined the effects of interpersonal CWBs and team trust on team learning. The findings demonstrated the team trust had a significant relationship with team learning ($\gamma = .36$ p <.01), while interpersonal CWBs had no effect on team learning. This showed that team trust fully mediated the relationship between interpersonal CWBs and team learning. We further checked the mediating effect of team trust on the relationship between interpersonal CWBs and team learning using Sobel's (1982) method. We found that the Sobel z-statistic was -2.63 ($p < .001$). The statistic confirmed a mediating role of team trust on the relationship between interpersonal CWBs and team learning, therefore, supporting hypothesis 2.

Equation 4 examined the relationship between interpersonal CWBs and team performance through the two mediators. The findings demonstrate that team learning significantly impacted team performance ($\gamma = .41$ p <.01), supporting hypothesis 3. Furthermore, interpersonal CWBs had a significant negative effect on team performance ($\gamma = -.63$ p <.01) after controlling the two mediators: team trust and team learning. This indicates a partial mediation; where team trust and team learning did not fully mediate the relationship between interpersonal CWBs and team performance, therefore, supporting hypothesis 4. Taken together, our findings strongly support our proposed mediating model.

To check possible common method bias due to the self-report of all measured items we tested the model with faculty advisors' evaluation scores as an alternative measure of team performance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Consistent with the above findings, team learning behavior significantly impacted team performance ($\gamma = .15$ p <.05). However, instead of the partial mediating effect, there was no direct effect of interpersonal CWBs on team performance with team trust and team learning as the mediators.

DISCUSSION

This study sought to reveal the impact of interpersonal CWBs on NPD team performance through the mediation of team interactions. While previous research has mainly investigated the antecedents of CWBs, our results reveal that interpersonal CWBs have significant effects on team interactions and outcomes. Specifically, we found that team trust mediates the effect of CWBs on team learning. Team learning in turn has a significant relationship with NPD team performance. In other words, team members' interpersonal misbehaviors lead to lower levels of emotional integration and less sharing and acquiring of new knowledge within the team. Furthermore, interpersonal misbehavior is not only detrimental to effective team collaboration process, but also directly influences the success of NPD projects.

Our study contributes to a better understanding of interpersonal CWBs in NPD processes. Previous CWBs research focuses mainly on the antecedents of CWBs and has demonstrated various individual and situational factors, such as individual integrity (Dalal, 2005), locus of control (Fox & Spector, 1999) and types of leadership (Einarsen, Aasland, & Skogstad, 2007) may influence the likelihood of CWBs occurrence. However, little is known about CWBs' impact on work outcomes in teams. Our study bridges this research gap and provides strong evidence to show the detrimental consequences of interpersonal CWBs on team congruity and capability in seeking new knowledge, which will lead to dampened team performance.

This study also provides important implications for practitioners in managing work teams. Given the increased popularity of teams in executing various tasks in the organizations, managers need to be aware that interpersonal aggression or deviances harm the social assimilation process among team members and creates "distance" among them, which may drag a team down and lead to low quality NPD projects. The NPD processes are inherently challenging and the success of NPD requires the concerted efforts of the whole team in generating innovative ideas. Team members' destructive behaviors can harm the team's overall performance through their impact on both team trust and team learning within the team.

The significant findings of the negative effects of interpersonal CWBs on various team outcomes, including team trust, team learning behavior, and overall team performance contribute to a better understanding of the interpersonal dynamics in NPD teams. However, it is important to note that there are several limitations in this study which should be addressed in future research. First, it is interesting to note that although interpersonal CWBs had a negative influence on NPD team performance through the mediation of team trust and team learning behavior with student self-report data, counter to our expectations, interpersonal CWBs had no impact on NPD team performance with faculty evaluation scores as the performance indicator. This finding suggests that our findings need to be interpreted in light of the source of the data. Further research should replicate the study by examining the interpersonal team dynamics with work teams in a range of real business settings and using a variety of performance indicators. Collecting data from work teams in “the real world” allows the adoption of external performance indicators such as speed to market, customer satisfaction, and sales volume, which strengthen the external validity of the study. Second, the study examined team dynamics in NPD teams, where NPD processes are interactive and the success of NPD requires the ongoing contribution from all team members. However, the impact of interpersonal CWBs on teams working on non-interactive groups tasks, where the members work independently with little interaction may require further investigation. Third, research has shown that the structure of the organization and other situational factors play a role in CWBs. For example, Chi-Ko Kwok et al. (2005) found that an increase in formal normative control, defined as the regulations of an organization or the superordinates presiding over the individual, leads to a reduction in CWBs. This type of leadership style can also impact CWBs and/or aggression in the organization (Einarsen et al., 2007). Research on how those situational factors moderate the relationship between interpersonal CWBs and team outcomes will not only shed new light on the influence of interpersonal CWBs on team processes, but also provide practitioners with useful guidelines for boosting the efficiency and effectiveness of work teams.

REFERENCES

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two step approach. *Psychological Bulletin, 103*, 411-423.

Aube, C., Rousseau, V., Mama, C., & Morin, E. M. (2009). Counterproductive behaviors and psychological well-being: The moderating effect of task interdependence. *Journal of Business and Psychology, 24*(3), 351-361.

Ayoko, O. B., Callan, V. J., & Hartel, C. E. J. (2003). Workplace conflict, bullying and counterproductive behaviors. *The International Journal of Organizational Analysis, 11*(4), 283-301.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Bechtoldt, M. N., Welk, C., Zapf, D., & Hartig, J. (2007). Main and moderating effects of self-control, organizational justice, and emotional labour on counterproductive behaviour at work. *European Journal of Work and Organizational Psychology, 16*(4), 479-500.

Bennett, R. J., & Robinson, S. L. (2000). Development of a measure of workplace deviance. *Journal of Applied Psychology, 85*(3), 349-360.

Brockman, B. K., Rawlston, M. E., Jones, M. A., & Halstead, D. (2010). An exploratory model of interpersonal cohesiveness in new product development teams. *Journal of Product Innovation Management, 27*(2), 201-219.

Bstieler, L., & Hemmert, M. (2010). Increasing learning and time efficiency in interorganizational new product development teams. *Journal of Product Innovation Management, 27*(4), 485-499.

Chi-Ko Kwok, Wing, T. A., & Ho, J. M. C. (2005). Normative controls and self-reported counterproductive behaviors in the workplace in china. *Applied Psychology: An International Review, 54*(4), 456-475.

Cohen-Charash, Y., & Mueller, J. S. (2007). Does perceived unfairness exacerbate or mitigate interpersonal counterproductive work behaviors related to envy? *Journal of Applied Psychology, 92*(3), 666-680.

Cortina, L. M., & Magley, V. J. (2003). Raising voice, risking retaliation: Events following interpersonal mistreatment in the workplace. *Journal of Occupational Health Psychology, 8*(4), 247-265.

Curseu, P. L., & Schrujier, S. G. L. (2010). Does conflict shatter trust or does trust obliterate conflict? Revisiting the relationships between team diversity, conflict, and trust. *Group Dynamics: Theory, Research, and Practice, 14*(1), 66-79.

Dalal, R. S. (2005). A meta-analysis of the relationship between organizational citizenship behavior and counterproductive work behavior. *Journal of Applied Psychology, 90*(6), 1241-1255.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly, 44*(2), 34.

Edmondson, A. C., Dillon, J. R., & Roloff, K. S. (2008). Three perspectives on team learning: Outcome improvement, task mastery, and group process. In J. P. Walsh, & A. P. Brief (Eds.), *The academy of management annals (vol. 1).* (pp. 269-314). New York, NY: Taylor & Francis Group/Lawrence Erlbaum Associates.

Edmondson, A. C., & Nembhard, I. M. (2009). Product development and learning in project teams: The challenges are the benefits. *Journal of Product Innovation Management, 26*(2), 123-138.

Einarsen, S., Aasland, M. S., & Skogstad, A. (2007). Destructive leadership behaviour: A definition and conceptual model. *The Leadership Quarterly, 18*(3), 207-216.

Ettlie, J. E., & Elsenbach, J. M. (2007). Modified stage-Gate® regimes in new product development. *Journal of Product Innovation Management, 24*(1), 20-33.

Fisk, G. M. (2010). "I want it all and I want it now!" An examination of the etiology, expression, and escalation of excessive employee entitlement. *Human Resource Management Review, 20*(2), 102-114.

Fox, S., & Spector, P. E. (1999). A model of work frustration–aggression. *Journal of Organizational Behavior, 20*(6), 915-931.

Griffin, A., & Hauser, J. R. (1996). Integrating R&D and marketing: A review and analysis of the literature. *Journal of Product Innovation Management, 13*(3), 25.

Hui, C. H., & Yee, C. (1999). The impact of psychological collectivism and workgroup atmosphere on Chinese employees' job satisfaction. *Applied Psychology, 48*(2), 175-185.

Hui, C. H., Yee, C., & Eastman, K. L. (1995). The relationship between individualism-collectivism and job satisfaction. *Applied Psychology: An International Review, 44*(3), 276-282.

Jackson, C., Colquitt, J. A., Wesson, M. J., & Zapata-Phelan, C. P. (2006). Psychological collectivism: A measurement validation and linkage to group member performance. *Journal of Applied Psychology, 91*(4), 884-899.

Kelloway, E. K., Francis, L., Prosser, M., & Cameron, J. E. (2007). Counterproductive work behavior as protest. *Human Resource Management Review, 20*(1), 18-25.

Kim, D. H. (1993). The link between individual and organizational learning. *Sloan Management Review, 35*(1), 37-50.

Lanyon, R. I., & Goldstein, L. D. (2004). Validity and reliability of a pre-employment screening test: The Counterproductive Behavior Index (CBI). *Journal of Business and Psychology, 18*(4), 533-553.

Lau, V. C., Au, W. T., & Ho, J. M. C. (2003). A qualitative and quantitative review of antecedents of counterproductive behavior in organizations. *Journal of Business and Psychology, 18*(1), 73-99.

Lee, K., & Allen, N. J. (2002). Organizational citizenship behavior and workplace deviance: The role of affect and cognitions. *Journal of Applied Psychology, 87*(1), 131-142.

Levine, E. L. (2010). Emotion and power (as social influence): Their impact on organizational citizenship and counterproductive individual and organizational behavior. *Human Resource Management Review, 20*(1), 4-17.

Lim, S., & Cortina, L. M. (2005). Interpersonal mistreatment in the workplace: The interface and impact of general incivility and sexual harassment. *Journal of Applied Psychology, 90*(3), 483-496.

Mangione, T. W., & Quinn, R. P. (1975). Job satisfaction, counterproductive behavior, and drug use at work. *Journal of Applied Psychology, 60*(1), 114-116.

Marcus, B., & Schuler, H. (2004). Antecedents of counterproductive behavior at work: A general perspective. *Journal of Applied Psychology*, *89*(4), 647-660.

Martinko, M. J., Gundlach, M. J., & Douglas, S. C. (2002). Toward an integrative theory of counterproductive workplace behavior: A causal reasoning perspective. *International Journal of Selection and Assessment*, *10*(1-2), 36-50.

McAllister, D. J. (1995). Affect- and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal*, *38*, 24-59.

Qiu, T., Qualls, W., Bohlmann, J., & Rupp, D. E. (2009). The effect of interactional fairness on the performance of cross-functional product development teams: A multilevel mediated model. *Journal of Product Innovation Management, 26*(2), 173-187.

Podsakoff, P. M., MacKenzie, S. B., Lee, J., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879.

Robinson, S. L., & Bennett, R. J. (1995). A typology of deviant workplace behaviors: A multidimensional scaling study. *Academy of Management Journal*, *38*(2), 555-572.

Rodell, J. B., & Judge, T. A. (2009). Can “good” stressors spark “bad” behaviors? The mediating role of emotions in links of challenge and hindrance stressors with citizenship and counterproductive behaviors. *Journal of Applied Psychology*, *94*(6), 1438-1451.

Sackett, P. R., Berry, C. M., Wiemann, S. A., & Laczo, R. M. (2006). Citizenship and counterproductive behavior: Clarifying relations between the two domains. *Human Performance, 19*(4), 441-464.

Salami, S. O. (2010). Job stress and counterproductive work behaviour: Negative affectivity as a moderator. *The Social Sciences, 5*(6), 486-492.

Salin, D. (2003). Ways of explaining workplace bullying: A review of enabling, motivating and precipitating structures and processes in the work environment. *Human Relations, 56*(10), 1213-1232.

Sarin, S., & McDermott, C. (2003). The effect of team leader characteristics on learning, knowledge application, and performance of cross-functional new product development teams. *Decision Sciences, 34*(4), 707-739.

Sethi, R., Smith, D. C., & Park, C. W. (2001). Cross-functional product development teams, creativity, and the innovativeness of new consumer products. *Journal of Marketing Research, XXXVIII*, 73-85.

Sheng, C. W., Tian, Y. F., & Chen, M. C. (2010). Relationships among teamwork behavior, trust, perceived team support, and team commitment. *Social Behavior and Personality, 38*(10), 1297-1307.

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equations models. In S. Leinhart (Ed.), *Sociological methodology* (pp. 290-312). San Francisco: Jossey-Bass, Inc.

Spector, P. E., Fox, S., Penney, L. M., Bruursema, K., Goh, A., & Kessler, S. (2006). The dimensionality of counterproductivity: Are all counterproductive behaviors created equal? *Journal of Vocational Behavior, 68*(3), 446-460.

van Emmerik, H., Jawahar, I. M., Schreus, B., & de Cuyper, N. (2011). Social capital, team efficacy and team potency: The mediating role of team learning behaviors. *Career Development International, 16*(1), 82-99.

Venkataramani, V., & Dalal, R. S. (2007). Who helps and harms whom? Relational antecedents of interpersonal helping and harming in organizations. *Journal of Applied Psychology, 92*(4), 952-966.

Yang, J. (2008). Can't serve customers right? an indirect effect of co-workers' counterproductive behaviour in the service environment. *Journal of Occupational & Organizational Psychology, 81*(1), 29-46.

Zaccaro, S. J., & McCoy, M. C. (1988). The effects of task and interpersonal cohesiveness on performance of a disjunctive group task. *Journal of Applied Social Psychology, 18*(10), 837-851.

Do Spring Training Results Matter in Major League Baseball?

Michael R. Summers
Pepperdine University

Stakeholders involved in the success of a major league baseball team include owners, managers, players, fans, and fantasy league players. While the performance records of teams and individual players in spring training games have little direct significance to these stakeholders, might they provide some information that would be useful in predicting performance in the upcoming regular season? This study compares the performance of teams and individual players in spring training games and regular season games to determine whether there are any significant relationships that can be used in these stakeholders' decisions.

INTRODUCTION

Spring training records are meaningless, aren't they? Many people would share the opinion of Dave Cameron (Cameron, 2010), who gives examples of players in the previous year who had great preseasons but were much less successful in the regular season. He concludes:

> *"The games don't count, and the players know this. They're working on things. They're facing minor league players or guys trying to come back from injury. Half the teams play in a desert atmosphere that helps the ball travel like it's Colorado. I know it's easy to get sucked in by the story of a new swing, a new pitch, a winter full of hard work, and I'm sure some of that is true. But you won't find those guys by looking at the stats. Ignore the numbers coming from the Cactus and Grapefruit Leagues. They don't mean a thing."*

On the other hand, Nate Springfield (Springfield, 2011) argues that, for the purpose of picking players who will perform well in fantasy leagues, there are certain statistical indicators, such as slugging percentage, that have been shown to be useful in predicting regular season performance.

For minor league players and others not sure of making the team, spring training results are certainly meaningful to their careers. Similarly, to veteran players sure of being on the team, their performance in spring training might help in salary negotiations or in their value for trading to another team. However, even though spring training statistics can be very important to the players, that does not mean that these results are necessarily predictive of their future performance.

Other stakeholders, such as owners, managers, fans, and fantasy league players, are more concerned with getting some insight into how the players and the team overall will perform in the regular season. Owners' profitability depends largely on the success of the team in the regular season (as well as on the cost of the players). Managers need to make proper decisions in hiring and trading players to enhance the team's success, which in turn will certainly affect their own careers. Fans' decisions on attending games will to some extent depend on their expectations of the team's and their favorite players' success. Fantasy league players need to decide which players to put on their teams in order to increase their chances of winning their competitions, which often involve monetary rewards. Obviously, the decisions of these stakeholders will be enhanced if they can find some relationship between spring training performance and regular season performance.

Roland Beech (Beech, 2007) compared preseason records to regular season records of basketball teams in the NBA during the previous five years. While he did observe that teams with better preseason records also had better regular season records, especially for the poorer teams, his results were not statistically significant due to the small sample sizes involved. NBA teams generally play just 8 preseason games, and other major sports also play just a few preseason games. However, MLB teams typically play between 30 and 40 spring training games each year, providing a much larger sample.

DATA

Major League Baseball provides statistics on their website MLB.com both for team records (http://mlb.mlb.com/mlb/standings) and for the performances of individual players (http://mlb.mlb.com/stats/sortable). For the five seasons of 2006 – 2010, team winning percentages in spring training games and in regular season games were compared, as well as team winning percentages in the preceding regular season. These statistics were broken down by year and by American League (14 teams) or National League (16 teams), as well as the totals for all five years. For the individual players, batting averages were compiled for spring training games, regular season games, and the preceding year's regular season games. Of the many players who participated in spring training, only those who had enough plate appearances to qualify for the batting championship in the preceding regular season, the current year's spring training season, and the current year's regular season were included each year. To qualify for the batting championship, a player must have at least 3.1 plate appearances for each scheduled game in the season (ordinarily a total of at least 502 plate appearances for a regular season).

TEAM RESULTS

Table 1 shows the winning percentages of the teams in each league for the preseason, previous year regular season, and current year regular season. A linear regression was run with each team's spring training record as the independent variable and their regular season record as the dependent variable to see if there was any relationship between the two. However, it would seem that a team's regular season record might more closely resemble their previous year's regular season record. After all, good teams tend to remain good teams for several years at a time, and the same for poor teams. In that case we would expect that a team's record in one season would show strong correlations with their records in other seasons, including spring training seasons. Therefore, regressions were also run with the previous regular season's record as the independent variable and with both the current year's preseason record and the previous regular season's record as independent variables.

Table 2 shows the statistical significance (p-value) for each regression model, as well as for each independent variable in the multiple regression models. For those 10 models using preseason results to forecast regular season results, only two showed significant relationships, the American League teams in 2009 and the National League teams in 2010, with p-values of .001 and .002, respectively. American League teams in 2007 also showed a marginal significance of .09. However, in most of the models there was no relationship. On the other hand, when teams' regular season records were compared with their previous year's regular season records, six of the ten models showed p-values below .10, with four of them below .05. When both the preseason records and the previous year's records were included as independent variables, five of the ten models showed levels of significance below .10, with four of them below .05. In these multiple regression models the preseason record variable again was significantly related to the regular season record in only two of the ten models, while the previous year's regular season record variable was significantly related to the regular season record in just three of the ten models (and just two below the .05 level), down from the six when it was the only independent variable. From these results it appears that the best models are those where the only independent variable is last year's regular season record.

All of the above models suffer from the small sample sizes resulting from breaking the data down by year and by league (14 data points each year for the American League and 16 for the National League). When all 150 data points are combined into a single model, the results are striking. The model using the preseason record as the independent variable is now extremely significant, with a p-value of 6.2 E-5. The resulting regression equation is:

*Winning Percentage = .40 + .20 * Preseason Winning Percentage*

Again, the model using the previous year's regular season record as the independent variable is even more significant, with a tiny p-value of 2.7 E-10. This regression equation is:

*Winning Percentage = .26 + .49 * Previous Year's Winning Percentage*

The model using both independent variables shows a p-value of 2.5 E-12, with both independent variables also very significant individually, with p-values of 2.2 E-4 and 1.0 E-9, respectively. This regression equation is:

*Winning Percentage = .19 + .16 * Preseason Winning Percentage*
*+ .45 * Previous Year's Winning Percentage*

While last year's regular season record still shows the greater significance, the preseason record variable certainly adds significantly to the model.

INDIVIDUAL PLAYERS' RESULTS

A similar regression analysis was performed for the batting averages of individual players over the same five-year period. Table 3 shows the data for regular season batting average compared to preseason batting average and the previous year's regular season batting average for each year. Sample sizes varied over the years from 45 to 79 players who had enough plate appearances to qualify in the previous regular season, the current preseason, and the current regular season. As with teams, a player's performance would seem to be fairly consistent from year to year, so we would expect a high correlation with the previous year's batting average. However, players do improve or suffer age-related declines over the course of their careers, so spring training results in a given year might provide some useful additional information, as they do for teams.

Table 4 shows the statistical significance (p-value) for each regression model, as well as for each independent variable in the multiple regression models. In three of the five years the preseason batting averages showed a correlation with regular season batting averages with a significance level of .10 or below. However, in all five years the models based on the previous year's batting average had significances of .002 or below. The models using both preseason batting average and previous year's batting average as independent variables had p-values of .002 or below in all five years as well. In these models the preseason batting average variable showed a significance of .10 or below in just two of the years, while in all five years the previous year's batting average variable was significant at .002 or below.

Again, combining all five years of data produced a very large sample size of 324 data points. The resulting regression model using only preseason batting averages now showed a significance level of .002. The regression equation is:

*Batting Average = .259 + .07 * Preseason Batting Average*

The model based only on the previous year's batting average showed a significance of 9.3 E-17, an extremely low p-value. The resulting regression equation is:

*Batting Average = .150 + .46 * Previous Year's Batting Average*

Finally, the model using both independent variables produced a p-value of just 6.4 E-17. The preseason batting average variable was significantly related to the current year's batting average with a p-value of .02, while again the previous year's batting average variable had a very small p-value of 6.9 E-16. Therefore, both variables contribute significantly to the model, which overall is highly significant. This regression equation is:

*Batting Average = .139 + .05 * Preseason Batting Average*
*+ .44 * Previous Year's Batting Average*

TESTING THE MODELS

Many studies of sports statistics have found statistically significant relationships for a particular time period, but these relationships often do not persist in later time periods. Certainly after a few years we can expect conditions to change, and these relationships should be reexamined. To see whether our models have any predictive value in the short term, we have collected the same data for the year 2011 (Tables 5 and 6) and compared the forecasts from our models based on the previous five years with the actual results in 2011.

Regarding the teams' winning percentages, the model based only on the preseason winning percentages (*Winning Percentage = .40 + .20 * Preseason Winning Percentage*) showed a correlation of only .15 with the actual 2011 winning percentages, certainly not significant. However, the model using both preseason winning percentages and the previous year's winning percentages (*Winning Percentage = .19 + .16 * Preseason Winning Percentage + .45 * Previous Year's Winning Percentage*) showed a correlation of .40 with the actual 2011 winning percentages, significant at the .029 level.

For players' batting averages, the model based only on the preseason batting averages (*Batting Average = .259 + .07 * Preseason Batting Average*) showed a correlation of .29 with the actual 2011 batting averages, significant at the .018 level. Again, the model using both preseason batting averages and the previous year's batting averages (*Batting Average = .139 + .05 * Preseason Batting Average + .44 * Previous Year's Batting Average*) showed even a higher correlation of .41 with the actual 2011 batting averages, significant at the .00077 level.

In both cases data from the preseason and the previous year's data from the years 2006 – 2010 provided excellent correlations with performance in the 2011 regular season.

CONCLUSIONS

As expected, both a team's winning percentage and individual players' batting averages are highly correlated with their performance in the previous year. Performance in spring training games is not as strongly correlated, especially when using small samples from one year at a time. However, preseason performance over a five-year period is significantly related to regular season performance, both for teams and for players, even when combined with the previous year's performance in a multiple regression model. Spring training performance measures can significantly contribute to the decisions made by owners, managers, players, fans, and fantasy league players.

REFERENCES

Beech, Roland. (2007). Does the NBA Preseason Matter? Retrieved from *http://www.82games.com/preseason.htm.*

Cameron, Dave. (2010, February 17). Spring Training Stats. Retrieved from *http://www.fangraphs.com/blogs/index.php/spring-training-stats/.*

MLB. Major League Baseball Stats. Retrieved from *http://mlb.mlb.com/stats/sortable.jsp.*

MLB. Regular Season Standings. Retrieved from *http://mlb.mlb.com/mlb/standings/index.jsp.*

Springfield, Nate. (2011, February 9). Spring Training Stats Can Mean Something. Retrieved from *http://www.baseballpress.com/article.php?id=775.*

TABLE 1
TEAM PRESEASON RECORDS AND REGULAR SEASON RECORDS

	2006 Preseason			Regular Season	
American League					
Team	W	L	PCT	*2005 Percentage*	*2006 Percentage*
Baltimore	13	17	0.433	0.457	0.432
Boston	9	20	0.310	0.586	0.531
Chi White Sox	10	19	0.345	0.611	0.556
Cleveland	20	12	0.625	0.574	0.481
Detroit	18	15	0.545	0.438	0.586
Kansas City	17	10	0.630	0.346	0.383
LA Angels	18	11	0.621	0.586	0.549
Minnesota	19	13	0.594	0.512	0.593
NY Yankees	15	16	0.484	0.586	0.599
Oakland	15	17	0.469	0.543	0.574
Seattle	11	17	0.393	0.426	0.481
Tampa Bay	13	16	0.448	0.414	0.377
Texas	12	16	0.429	0.488	0.494
Toronto	12	18	0.400	0.494	0.537

National League					
Team	W	L	PCT	*2005 Percentage*	*2006 Percentage*
Arizona	18	14	0.563	0.475	0.469
Atlanta	11	18	0.379	0.556	0.488
Chi Cubs	16	13	0.552	0.488	0.407
Cincinnati	22	11	0.667	0.451	0.494
Colorado	17	12	0.586	0.414	0.469
Florida	19	9	0.679	0.512	0.481
Houston	11	19	0.367	0.549	0.506
LA Dodgers	15	13	0.536	0.438	0.543
Milwaukee	14	16	0.467	0.500	0.463
NY Mets	16	14	0.533	0.512	0.599
Philadelphia	19	11	0.633	0.543	0.525
Pittsburgh	15	17	0.469	0.414	0.414
San Diego	17	11	0.607	0.506	0.543
San Francisco	13	17	0.433	0.463	0.472
St. Louis	15	14	0.517	0.617	0.516
Washington	9	23	0.281	0.500	0.438

TABLE 1 (CONT.)

	2007 Preseason			Regular Season	
American League					
Team	W	L	PCT	*2006 Percentage*	*2007 Percentage*
Baltimore	16	13	0.552	0.432	0.426
Boston	15	12	0.556	0.531	0.593
Chi White Sox	10	22	0.313	0.556	0.444
Cleveland	16	14	0.533	0.481	0.593
Detroit	21	10	0.677	0.586	0.543
Kansas City	11	18	0.379	0.383	0.426
LA Angels	19	14	0.576	0.549	0.580
Minnesota	14	17	0.452	0.593	0.488
NY Yankees	14	13	0.519	0.599	0.580
Oakland	17	12	0.586	0.574	0.469
Seattle	14	20	0.412	0.481	0.543
Tampa Bay	10	19	0.345	0.377	0.407
Texas	16	11	0.593	0.494	0.463
Toronto	12	14	0.462	0.537	0.512
National League					
Team	W	L	PCT	*2006 Percentage*	*2007 Percentage*
Arizona	20	12	0.625	0.469	0.556
Atlanta	18	12	0.600	0.488	0.519
Chi Cubs	17	13	0.567	0.407	0.525
Cincinnati	18	12	0.600	0.494	0.444
Colorado	13	12	0.520	0.469	0.552
Florida	13	17	0.433	0.481	0.438
Houston	18	11	0.621	0.506	0.451
LA Dodgers	17	16	0.515	0.543	0.506
Milwaukee	13	17	0.433	0.463	0.512
NY Mets	12	21	0.364	0.599	0.543
Philadelphia	11	18	0.379	0.525	0.549
Pittsburgh	12	17	0.414	0.414	0.420
San Diego	17	14	0.548	0.543	0.546
San Francisco	15	18	0.455	0.472	0.438
St. Louis	16	10	0.615	0.516	0.481
Washington	11	17	0.393	0.438	0.451

TABLE 1 (CONT.)

	2008 Preseason			Regular Season	
American League					
Team	W	L	PCT	*2007 Percentage*	*2008 Percentage*
Baltimore	10	17	0.370	0.426	0.422
Boston	8	13	0.381	0.593	0.586
Chi White Sox	11	19	0.367	0.444	0.546
Cleveland	15	14	0.517	0.593	0.500
Detroit	15	14	0.517	0.543	0.457
Kansas City	16	14	0.533	0.426	0.463
LA Angels	19	10	0.655	0.580	0.617
Minnesota	15	15	0.500	0.488	0.540
NY Yankees	14	12	0.538	0.580	0.549
Oakland	18	8	0.692	0.469	0.466
Seattle	13	16	0.448	0.543	0.377
Tampa Bay	18	8	0.692	0.407	0.599
Texas	17	11	0.607	0.463	0.488
Toronto	13	16	0.448	0.512	0.531
National League					
Team	W	L	PCT	*2007 Percentage*	*2008 Percentage*
Arizona	12	18	0.400	0.556	0.506
Atlanta	15	15	0.500	0.519	0.444
Chi Cubs	15	15	0.500	0.525	0.602
Cincinnati	17	15	0.531	0.444	0.457
Colorado	14	12	0.538	0.552	0.457
Florida	19	11	0.633	0.438	0.522
Houston	13	18	0.419	0.451	0.534
LA Dodgers	11	18	0.379	0.506	0.519
Milwaukee	18	11	0.621	0.512	0.556
NY Mets	20	11	0.645	0.543	0.549
Philadelphia	12	18	0.400	0.549	0.568
Pittsburgh	13	17	0.433	0.420	0.414
San Diego	12	14	0.462	0.546	0.389
San Francisco	9	23	0.281	0.438	0.444
St. Louis	17	10	0.630	0.481	0.531
Washington	12	18	0.400	0.451	0.366

TABLE 1 (CONT.)

	2009 Preseason			Regular Season	
American League					
Team	W	L	PCT	*2008 Percentage*	*2009 Percentage*
Baltimore	13	21	0.382	0.422	0.395
Boston	20	14	0.588	0.586	0.586
Chi White Sox	16	20	0.444	0.546	0.488
Cleveland	12	20	0.375	0.500	0.401
Detroit	15	17	0.469	0.457	0.528
Kansas City	18	14	0.563	0.463	0.401
LA Angels	26	8	0.765	0.617	0.599
Minnesota	19	13	0.594	0.540	0.534
NY Yankees	24	10	0.706	0.549	0.636
Oakland	17	18	0.486	0.466	0.463
Seattle	16	18	0.471	0.377	0.525
Tampa Bay	15	16	0.484	0.599	0.519
Texas	21	14	0.600	0.488	0.537
Toronto	13	17	0.433	0.531	0.463
National League					
Team	W	L	PCT	*2008 Percentage*	*2009 Percentage*
Arizona	11	23	0.324	0.506	0.432
Atlanta	21	12	0.636	0.444	0.531
Chi Cubs	18	18	0.500	0.602	0.516
Cincinnati	13	20	0.394	0.457	0.481
Colorado	17	17	0.500	0.457	0.568
Florida	12	19	0.387	0.522	0.537
Houston	12	20	0.375	0.534	0.457
LA Dodgers	15	22	0.405	0.519	0.586
Milwaukee	22	10	0.688	0.556	0.494
NY Mets	18	15	0.545	0.549	0.432
Philadelphia	13	19	0.406	0.568	0.574
Pittsburgh	17	15	0.531	0.414	0.385
San Diego	10	21	0.323	0.389	0.463
San Francisco	21	19	0.525	0.444	0.543
St. Louis	19	12	0.613	0.531	0.562
Washington	15	17	0.469	0.366	0.364

TABLE 1 (CONT.)

	2010 Preseason			Regular Season	
American League					
Team	W	L	PCT	*2009 Percentage*	*2010 Percentage*
Baltimore	12	17	0.414	0.395	0.407
Boston	17	14	0.548	0.586	0.549
Chi White Sox	12	16	0.429	0.488	0.543
Cleveland	19	9	0.679	0.401	0.426
Detroit	18	12	0.600	0.528	0.500
Kansas City	14	13	0.519	0.401	0.414
LA Angels	13	15	0.464	0.599	0.494
Minnesota	16	14	0.533	0.534	0.580
NY Yankees	13	15	0.464	0.636	0.586
Oakland	12	17	0.414	0.463	0.500
Seattle	12	18	0.400	0.525	0.377
Tampa Bay	20	8	0.714	0.519	0.593
Texas	10	19	0.345	0.537	0.556
Toronto	12	13	0.480	0.463	0.525
National League					
Team	W	L	PCT	*2009 Percentage*	*2010 Percentage*
Arizona	15	17	0.469	0.432	0.401
Atlanta	17	12	0.586	0.531	0.562
Chi Cubs	18	12	0.600	0.516	0.463
Cincinnati	12	16	0.429	0.481	0.562
Colorado	17	13	0.567	0.568	0.512
Florida	14	14	0.500	0.537	0.494
Houston	13	15	0.464	0.457	0.469
LA Dodgers	11	17	0.393	0.586	0.494
Milwaukee	16	14	0.533	0.494	0.475
NY Mets	14	16	0.467	0.432	0.488
Philadelphia	15	12	0.556	0.574	0.599
Pittsburgh	7	21	0.250	0.385	0.352
San Diego	18	10	0.643	0.463	0.556
San Francisco	23	12	0.657	0.543	0.568
St. Louis	15	14	0.517	0.562	0.531
Washington	10	20	0.333	0.364	0.426

TABLE 2
P-VALUES OF REGRESSION MODELS FOR TEAM PERFORMANCE

		PRESEASON	PREVIOUS YEAR	PRESEASON AND PREVIOUS YEAR		
				Preseason	*Previous Year*	*Overall*
2006	**AL**	0.88	0.01	0.73	0.01	0.04
	NL	0.32	0.20	0.20	0.13	0.19
2007	**AL**	0.09	0.05	0.28	0.16	0.09
	NL	0.71	0.17	0.64	0.17	0.35
2008	**AL**	0.39	0.51	0.36	0.46	0.52
	NL	0.18	0.23	0.23	0.30	0.24
2009	**AL**	0.001	0.06	0.009	0.48	0.005
	NL	0.66	0.09	0.79	0.11	0.24
2010	**AL**	0.60	0.02	0.37	0.02	0.05
	NL	0.002	0.004	0.05	0.07	0.002
Total		6.2 E-5	2.7 E-10	2.2 E-4	1.0 E-9	2.5 E-12

TABLE 3
INDIVIDUAL PRESEASON AND REGULAR SEASON BATTING AVERAGES

		Preseason 2006	*Regular 2005*	*Regular 2006*
Player	**Team**	**AVG**	**AVG**	**AVG**
Atkins, G	COL	0.327	0.287	0.329
Berkman, L	HOU	0.346	0.293	0.315
Berroa, A	KC	0.439	0.270	0.234
Biggio, C	HOU	0.309	0.264	0.246
Blalock, H	TEX	0.250	0.263	0.266
Cabrera, O	LAA	0.333	0.257	0.282
Cano, R	NYY	0.337	0.297	0.342
Chavez, E	OAK	0.293	0.269	0.241
Clayton, R	WSH	0.215	0.270	0.258
Crawford, C	TB	0.281	0.301	0.305
DeJesus, D	KC	0.310	0.293	0.295
Dunn, A	CIN	0.288	0.247	0.234
Dye, J	CWS	0.279	0.274	0.315
Eckstein, D	STL	0.339	0.294	0.292
Everett, A	HOU	0.235	0.248	0.239
Figgins, C	LAA	0.362	0.290	0.267
Giles, B	SD	0.323	0.301	0.263
Gonzalez, L	COL	0.383	0.271	0.271
Green, S	ARI	0.213	0.286	0.277
Hafner, T	CLE	0.354	0.305	0.308
Hall, B	MIL	0.342	0.291	0.270
Hatteberg, S	CIN	0.286	0.256	0.289
Helton, T	COL	0.424	0.320	0.302
Huff, A	TB	0.389	0.261	0.267
Ibanez, R	SEA	0.443	0.280	0.289
Iguchi, T	CWS	0.182	0.278	0.281
Inge, B	DET	0.308	0.261	0.253
Jenkins, G	MIL	0.270	0.292	0.271
Johnson, N	WSH	0.172	0.289	0.290
Jones, J	CHC	0.322	0.249	0.285
Kendall, J	OAK	0.232	0.271	0.295
Konerko, P	CWS	0.319	0.283	0.313
Lopez, F	CIN	0.261	0.291	0.274
Lowell, M	BOS	0.327	0.236	0.284
Millar, K	BAL	0.288	0.272	0.272
Mora, M	BAL	0.315	0.283	0.274
Overbay, L	TOR	0.204	0.276	0.312
Peralta, J	CLE	0.237	0.292	0.257
Pierre, J	CHC	0.222	0.276	0.292
Ramirez, A	CHC	0.483	0.302	0.291
Rollins, J	PHI	0.278	0.290	0.277

TABLE 3 (CONT.)

		Preseason 2006	*Regular 2005*	*Regular 2006*
Player	**Team**	**AVG**	**AVG**	**AVG**
Sizemore, G	CLE	0.323	0.289	0.290
Swisher, N	OAK	0.347	0.236	0.254
Tracy, C	ARI	0.333	0.308	0.281
Utley, C	PHI	0.278	0.291	0.309
Wilson, P	HOU	0.240	0.260	0.263
Wright, D	NYM	0.242	0.306	0.311

TABLE 3 (CONT.)

		Preseason 2007	*Regular 2006*	*Regular 2007*
Player	**Team**	**AVG**	**AVG**	**AVG**
Atkins, G	COL	0.322	0.329	0.301
Beltran, C	NYM	0.237	0.275	0.276
Beltre, A	SEA	0.367	0.268	0.276
Berkman, L	HOU	0.321	0.315	0.278
Betancourt, Y	SEA	0.310	0.289	0.289
Burrell, P	PHI	0.237	0.258	0.256
Byrnes, E	ARI	0.300	0.267	0.286
Cabrera, M	FLA	0.303	0.339	0.320
Cabrera, M	NYY	0.206	0.280	0.273
Cabrera, O	LAA	0.286	0.282	0.301
Cano, R	NYY	0.338	0.342	0.306
Castillo, L	MIN	0.436	0.296	0.301
Crawford, C	TB	0.281	0.305	0.315
Cuddyer, M	MIN	0.348	0.284	0.276
Damon, J	NYY	0.220	0.285	0.270
DeJesus, D	KC	0.321	0.295	0.260
DeRosa, M	CHC	0.300	0.296	0.293
Dunn, A	CIN	0.377	0.234	0.264
Dye, J	CWS	0.361	0.315	0.254
Feliz, P	SF	0.325	0.244	0.253
Francoeur, J	ATL	0.309	0.260	0.293
Giles, B	SD	0.298	0.263	0.271
Gonzalez, A	SD	0.367	0.304	0.282
Granderson, C	DET	0.314	0.260	0.302
Hafner, T	CLE	0.208	0.308	0.266
Hall, B	MIL	0.313	0.270	0.254
Hawpe, B	COL	0.315	0.293	0.291
Helton, T	COL	0.396	0.302	0.320
Holliday, M	COL	0.340	0.326	0.340
Howard, R	PHI	0.221	0.313	0.268
Hudson, O	ARI	0.434	0.287	0.294
Huff, A	BAL	0.361	0.267	0.280
Ibanez, R	SEA	0.375	0.289	0.291
Iguchi, T	CWS	0.234	0.281	0.267
Inge, B	DET	0.258	0.253	0.236
Jeter, D	NYY	0.297	0.343	0.322
Jones, A	ATL	0.259	0.262	0.222
Kearns, A	WSH	0.262	0.264	0.266
Konerko, P	CWS	0.348	0.313	0.259
LaRoche, A	PIT	0.296	0.285	0.272
Lofton, K	TEX	0.302	0.301	0.296

TABLE 3 (CONT.)

		Preseason 2007	*Regular 2006*	*Regular 2007*
Player	**Team**	**AVG**	**AVG**	**AVG**
Lopez, F	WSH	0.185	0.274	0.245
Lopez, J	SEA	0.228	0.282	0.252
Loretta, M	HOU	0.321	0.285	0.287
Lowell, M	BOS	0.156	0.284	0.324
Markakis, N	BAL	0.343	0.291	0.300
Matthews, G	LAA	0.267	0.313	0.252
Mora, M	BAL	0.246	0.274	0.274
Morneau, J	MIN	0.290	0.321	0.271
Ordonez, M	DET	0.283	0.298	0.363
Ortiz, D	BOS	0.226	0.287	0.332
Phillips, B	CIN	0.338	0.276	0.288
Pujols, A	STL	0.286	0.331	0.327
Ramirez, A	CHC	0.388	0.291	0.310
Ramirez, H	FLA	0.297	0.292	0.332
Ramirez, M	BOS	0.289	0.321	0.296
Renteria, E	ATL	0.264	0.293	0.332
Reyes, J	NYM	0.329	0.300	0.280
Roberts, B	BAL	0.231	0.286	0.290
Rodriguez, A	NYY	0.283	0.290	0.314
Rodriguez, I	DET	0.394	0.300	0.281
Rollins, J	PHI	0.371	0.277	0.296
Sizemore, G	CLE	0.115	0.290	0.277
Soriano, A	CHC	0.288	0.277	0.299
Suzuki, I	SEA	0.319	0.322	0.351
Swisher, N	OAK	0.303	0.254	0.262
Teixeira, M	TEX	0.245	0.282	0.306
Tejada, M	BAL	0.246	0.330	0.296
Uggla, D	FLA	0.224	0.282	0.245
Utley, C	PHI	0.348	0.309	0.332
Vidro, J	SEA	0.324	0.289	0.314
Vizquel, O	SF	0.265	0.295	0.246
Willingham, J	FLA	0.177	0.277	0.265
Wilson, J	WSH	0.333	0.273	0.296
Winn, R	SF	0.271	0.262	0.300
Wright, D	NYM	0.290	0.311	0.325
Youkilis, K	BOS	0.368	0.279	0.288
Young, M	TEX	0.380	0.314	0.315
Zimmerman, R	WSH	0.414	0.287	0.266

TABLE 3 (CONT.)

		Preseason 2008	*Regular 2007*	*Regular 2008*
Player	**Team**	**AVG**	**AVG**	**AVG**
Abreu, B	NYY	0.333	0.283	0.296
Atkins, G	COL	0.250	0.301	0.286
Bay, J	PIT	0.286	0.247	0.286
Berkman, L	HOU	0.296	0.278	0.312
Betancourt, Y	SEA	0.294	0.289	0.279
Cabrera, M	DET	0.288	0.320	0.292
Cabrera, O	CWS	0.203	0.301	0.281
Cano, R	NYY	0.446	0.306	0.271
Cust, J	OAK	0.244	0.256	0.231
Damon, J	NYY	0.255	0.270	0.303
DeJesus, D	KC	0.327	0.260	0.307
Drew, S	ARI	0.302	0.238	0.291
Dunn, A	CIN	0.189	0.264	0.236
Dye, J	CWS	0.186	0.254	0.292
Ellis, M	OAK	0.283	0.276	0.233
Encarnacion, E	CIN	0.152	0.289	0.251
Ethier, A	LAD	0.377	0.284	0.305
Fielder, P	MIL	0.292	0.288	0.276
Figgins, C	LAA	0.315	0.330	0.276
Francoeur, J	ATL	0.242	0.293	0.239
Gordon, A	KC	0.310	0.247	0.260
Holliday, M	COL	0.356	0.340	0.321
Howard, R	PHI	0.313	0.268	0.251
Ibanez, R	SEA	0.314	0.291	0.293
Iwamura, A	TB	0.340	0.285	0.274
Jeter, D	NYY	0.269	0.322	0.300
Johnson, K	ATL	0.226	0.276	0.287
Jones, A	BAL	0.259	0.222	0.270
Kinsler, I	TEX	0.422	0.263	0.319
Konerko, P	CWS	0.316	0.259	0.240
LaRoche, A	PIT	0.327	0.272	0.270
Lee, D	CHC	0.179	0.317	0.291
Lopez, F	WSH	0.222	0.245	0.283
Lopez, J	SEA	0.278	0.252	0.297
Markakis, N	BAL	0.298	0.300	0.306
Martin, R	LAD	0.215	0.293	0.280
Millar, K	BAL	0.313	0.254	0.234
Molina, Y	STL	0.222	0.276	0.292
Mora, M	BAL	0.407	0.274	0.285
Morneau, J	MIN	0.200	0.271	0.300
Ordonez, M	DET	0.333	0.363	0.317

TABLE 3 (CONT.)

Player	Team	*Preseason 2008* AVG	*Regular 2007* AVG	*Regular 2008* AVG
Pedroia, D	BOS	0.152	0.317	0.326
Pena, C	TB	0.278	0.282	0.247
Phillips, B	CIN	0.284	0.288	0.261
Polanco, P	DET	0.408	0.341	0.307
Pujols, A	STL	0.407	0.327	0.357
Ramirez, H	FLA	0.378	0.332	0.301
Renteria, E	DET	0.234	0.332	0.270
Reyes, J	NYM	0.314	0.280	0.297
Rios, A	TOR	0.175	0.297	0.291
Roberts, B	BAL	0.265	0.290	0.296
Rollins, J	PHI	0.188	0.296	0.277
Rowand, A	SF	0.277	0.309	0.271
Soriano, A	CHC	0.300	0.299	0.280
Suzuki, I	SEA	0.211	0.351	0.310
Swisher, N	CWS	0.215	0.262	0.219
Teahen, M	KC	0.271	0.285	0.255
Teixeira, M	ATL	0.211	0.306	0.308
Tejada, M	HOU	0.375	0.296	0.283
Theriot, R	CHC	0.329	0.266	0.307
Thome, J	CWS	0.246	0.275	0.245
Uggla, D	FLA	0.253	0.245	0.260
Upton, B	TB	0.326	0.300	0.273
Utley, C	PHI	0.214	0.332	0.292
Victorino, S	PHI	0.294	0.281	0.293
Weeks, R	MIL	0.254	0.235	0.234
Winn, R	SF	0.318	0.300	0.306
Wright, D	NYM	0.284	0.325	0.302
Youkilis, K	BOS	0.279	0.288	0.312
Young, C	ARI	0.333	0.237	0.248
Young, D	MIN	0.286	0.288	0.290
Young, M	TEX	0.403	0.315	0.284

TABLE 3 (CONT.)

		Preseason 2009	*Regular 2008*	*Regular 2009*
Player	**Team**	**AVG**	**AVG**	**AVG**
Bourn, M	HOU	0.261	0.229	0.285
Cameron, M	MIL	0.267	0.243	0.250
Cust, J	OAK	0.254	0.231	0.240
Damon, J	NYY	0.262	0.303	0.282
DeJesus, D	KC	0.303	0.307	0.281
Dye, J	CWS	0.208	0.292	0.250
Ellsbury, J	BOS	0.266	0.280	0.301
Escobar, Y	ATL	0.284	0.288	0.299
Ethier, A	LAD	0.273	0.305	0.272
Fielder, P	MIL	0.273	0.276	0.299
Figgins, C	LAA	0.380	0.276	0.298
Francoeur, J	ATL	0.328	0.239	0.280
Guzman, C	WSH	0.242	0.316	0.284
Holliday, M	OAK	0.306	0.321	0.313
Howard, R	PHI	0.333	0.251	0.279
Huff, A	BAL	0.237	0.304	0.241
Ibanez, R	PHI	0.310	0.293	0.272
Jones, A	BAL	0.333	0.270	0.277
Kemp, M	LAD	0.272	0.290	0.297
Kendall, J	MIL	0.242	0.246	0.241
Kinsler, I	TEX	0.299	0.319	0.253
Konerko, P	CWS	0.364	0.240	0.277
Kubel, J	MIN	0.365	0.272	0.300
LaRoche, A	PIT	0.239	0.270	0.258
Loney, J	LAD	0.292	0.289	0.281
McLouth, N	PIT	0.293	0.276	0.256
Pence, H	HOU	0.329	0.269	0.282
Peralta, J	CLE	0.394	0.276	0.254
Pujols, A	STL	0.293	0.357	0.327
Ramirez, A	CWS	0.319	0.290	0.277
Renteria, E	SF	0.229	0.270	0.250
Reynolds, M	ARI	0.323	0.239	0.260
Ross, C	FLA	0.365	0.260	0.270
Rowand, A	SF	0.189	0.271	0.261
Schumaker, S	STL	0.287	0.302	0.303
Scott, L	BAL	0.288	0.257	0.258
Sizemore, G	CLE	0.355	0.268	0.248
Soriano, A	CHC	0.325	0.280	0.241
Swisher, N	NYY	0.222	0.219	0.249
Teixeira, M	NYY	0.433	0.308	0.292
Theriot, R	CHC	0.412	0.307	0.284
Uggla, D	FLA	0.206	0.260	0.243
Votto, J	CIN	0.314	0.297	0.322
Winn, R	SF	0.253	0.306	0.262
Young, M	TEX	0.338	0.284	0.322

TABLE 3 (CONT.)

		Preseason 2010	*Regular 2009*	*Regular 2010*
Player	**Team**	**AVG**	**AVG**	**AVG**
Andrus, E	TEX	0.211	0.267	0.265
Aybar, E	LAA	0.346	0.312	0.253
Bartlett, J	TB	0.373	0.320	0.254
Betancourt, Y	KC	0.236	0.245	0.259
Blake, C	LAD	0.352	0.280	0.248
Braun, R	MIL	0.250	0.320	0.304
Butler, B	KC	0.333	0.301	0.318
Byrd, M	CHC	0.302	0.283	0.293
Cabrera, M	DET	0.356	0.324	0.328
Cabrera, M	ATL	0.286	0.274	0.255
Cano, R	NYY	0.377	0.320	0.319
Cantu, J	FLA	0.327	0.289	0.256
Choo, S	CLE	0.393	0.300	0.300
Crawford, C	TB	0.226	0.305	0.307
Cuddyer, M	MIN	0.407	0.276	0.271
Damon, J	DET	0.367	0.282	0.271
Drew, S	ARI	0.365	0.261	0.278
Dunn, A	WSH	0.208	0.267	0.260
Escobar, Y	ATL	0.283	0.299	0.256
Ethier, A	LAD	0.292	0.272	0.292
Fielder, P	MIL	0.246	0.299	0.261
Figgins, C	SEA	0.254	0.298	0.259
Fowler, D	COL	0.229	0.266	0.260
Francoeur, J	NYM	0.197	0.280	0.249
Gonzalez, A	SD	0.204	0.277	0.298
Granderson, C	NYY	0.286	0.249	0.247
Gutierrez, F	SEA	0.268	0.283	0.245
Headley, C	SD	0.319	0.262	0.264
Hill, A	TOR	0.417	0.286	0.205
Howard, R	PHI	0.299	0.279	0.276
Hudson, O	MIN	0.235	0.283	0.268
Huff, A	SF	0.310	0.241	0.290
Ibanez, R	PHI	0.130	0.272	0.275
Jeter, D	NYY	0.231	0.334	0.270
Jones, A	BAL	0.293	0.277	0.284
Kemp, M	LAD	0.265	0.297	0.249
Konerko, P	CWS	0.338	0.277	0.312
Kouzmanoff, K	OAK	0.288	0.255	0.247
Kubel, J	MIN	0.281	0.300	0.249
Lind, A	TOR	0.222	0.305	0.237
Loney, J	LAD	0.304	0.281	0.267

TABLE 3 (CONT.)

Player	Team	*Preseason 2010* AVG	*Regular 2009* AVG	*Regular 2010* AVG
Longoria, E	TB	0.304	0.281	0.294
Lopez, J	SEA	0.299	0.272	0.239
Ludwick, R	STL	0.303	0.265	0.251
Markakis, N	BAL	0.254	0.293	0.297
Ortiz, D	BOS	0.226	0.238	0.270
Pena, C	TB	0.176	0.227	0.196
Pence, H	HOU	0.373	0.282	0.282
Peralta, J	CLE	0.259	0.254	0.249
Podsednik, S	KC	0.308	0.304	0.297
Polanco, P	PHI	0.371	0.285	0.298
Prado, M	ATL	0.383	0.307	0.307
Pujols, A	STL	0.306	0.327	0.312
Ramirez, A	CWS	0.261	0.277	0.282
Ramirez, H	FLA	0.313	0.342	0.300
Rasmus, C	STL	0.362	0.251	0.276
Reynolds, M	ARI	0.368	0.260	0.198
Rolen, S	CIN	0.220	0.305	0.285
Sandoval, P	SF	0.281	0.330	0.268
Schumaker, S	STL	0.182	0.303	0.265
Scott, L	BAL	0.259	0.258	0.284
Scutaro, M	BOS	0.217	0.282	0.275
Span, D	MIN	0.308	0.311	0.264
Suzuki, I	SEA	0.257	0.352	0.315
Swisher, N	NYY	0.313	0.249	0.288
Tejada, M	BAL	0.274	0.313	0.269
Theriot, R	CHC	0.359	0.284	0.270
Uggla, D	FLA	0.197	0.243	0.287
Upton, B	TB	0.295	0.241	0.237
Upton, J	ARI	0.386	0.300	0.273
Utley, C	PHI	0.339	0.282	0.275
Victorino, S	PHI	0.327	0.292	0.259
Votto, J	CIN	0.352	0.322	0.324
Wells, V	TOR	0.300	0.260	0.273
Werth, J	PHI	0.203	0.268	0.296
Wright, D	NYM	0.278	0.307	0.283
Young, M	TEX	0.429	0.322	0.284
Zimmerman, R	WSH	0.393	0.292	0.307
Zobrist, B	TB	0.358	0.297	0.238

TABLE 4
P-VALUES OF REGRESSION MODELS FOR INDIVIDUAL BATTING AVERAGES

	Preseason	Previous Year	Preseason and Previous Year		
			Preseason	*Previous Year*	*Overall*
2006	0.88	4.0 E-4	0.72	4.5 E-4	0.002
2007	0.10	4.3 E-5	0.15	.68 E-5	.88 E-5
2008	0.06	4.6 E-5	0.09	7.4 E-5	6.3 E-5
2009	0.02	0.002	0.02	0.002	7.2 E-4
2010	0.27	2.6 E-4	0.69	5.0 E-4	0.001
Total	0.002	9.3 E-17	0.02	6.9 E-16	6.4 E-17

TABLE 5
2011 TEAM PRESEASON RECORDS AND REGULAR SEASON RECORDS

	2011 Preseason			**Regular Season**	
American League					
Team	W	L	PCT	*2010 Percentage*	*2011 Percentage*
Baltimore	15	15	0.500	0.407	0.426
Boston	14	19	0.424	0.549	0.556
Chi White Sox	11	20	0.355	0.543	0.488
Cleveland	15	14	0.517	0.426	0.494
Detroit	20	14	0.588	0.500	0.586
Kansas City	20	10	0.667	0.414	0.438
LA Angels	18	13	0.581	0.494	0.531
Minnesota	20	12	0.625	0.580	0.389
NY Yankees	13	15	0.464	0.586	0.599
Oakland	12	21	0.364	0.500	0.457
Seattle	16	13	0.552	0.377	0.414
Tampa Bay	15	14	0.517	0.593	0.562
Texas	13	16	0.448	0.556	0.593
National League					
Team	W	L	PCT	*2010 Percentage*	*2011 Percentage*
Toronto	16	14	0.533	0.525	0.500
Arizona	12	25	0.324	0.401	0.580
Atlanta	17	13	0.567	0.562	0.549
Chi Cubs	14	19	0.424	0.463	0.438
Cincinnati	17	14	0.548	0.562	0.488
Colorado	20	11	0.645	0.512	0.451
Florida	15	15	0.500	0.494	0.444
Houston	11	24	0.314	0.469	0.346
LA Dodgers	14	21	0.400	0.494	0.509
Milwaukee	19	11	0.633	0.475	0.593
NY Mets	17	15	0.531	0.488	0.475
Philadelphia	21	14	0.600	0.599	0.630
Pittsburgh	12	21	0.364	0.352	0.444
San Diego	13	17	0.433	0.556	0.438
San Francisco	23	12	0.657	0.568	0.531
St. Louis	14	16	0.467	0.531	0.556
Washington	15	14	0.517	0.426	0.497

TABLE 6
2011 INDIVIDUAL PRESEASON AND REGULAR SEASON BATTING AVERAGES

Player	Team	*Preseason 2011* AVG	*Regular 2010* AVG	*Regular 2011* AVG
Abreu, B	LAA	0.308	0.255	0.253
Andrus, E	TEX	0.274	0.265	0.279
Aybar, E	LAA	0.317	0.253	0.279
Bautista, J	TOR	0.4	0.26	0.302
Bourn, M	HOU	0.273	0.265	0.294
Butler, B	KC	0.347	0.318	0.291
Cabrera, M	DET	0.311	0.328	0.344
Cabrera, M	KC	0.468	0.255	0.305
Cano, R	NYY	0.236	0.319	0.302
Castro, S	CHC	0.348	0.3	0.307
Desmond, I	WSH	0.29	0.269	0.253
Escobar, A	KC	0.364	0.235	0.254
Escobar, Y	TOR	0.394	0.256	0.29
Ethier, A	LAD	0.269	0.292	0.292
Francoeur, J	KC	0.227	0.249	0.285
Gardner, B	NYY	0.26	0.277	0.259
Gonzalez, A	ATL	0.294	0.25	0.241
Guerrero, V	BAL	0.364	0.3	0.29
Holliday, M	STL	0.345	0.312	0.296
Howard, R	PHI	0.278	0.276	0.253
Huff, A	SF	0.369	0.29	0.246
Ibanez, R	PHI	0.253	0.275	0.245
Infante, O	FLA	0.414	0.321	0.276
Jackson, A	DET	0.209	0.293	0.249
Jeter, D	NYY	0.304	0.27	0.297
Johnson, K	ARI	0.333	0.284	0.222
Jones, A	BAL	0.304	0.284	0.28
Kemp, M	LAD	0.29	0.249	0.324
Kendrick, H	LAA	0.364	0.279	0.285
Konerko, P	CWS	0.31	0.312	0.3
Lind, A	TOR	0.367	0.237	0.251
Longoria, E	TB	0.255	0.294	0.244
Markakis, N	BAL	0.375	0.297	0.284
Martinez, V	DET	0.292	0.302	0.33
Matsui, H	OAK	0.169	0.274	0.251
McCutchen, A	PIT	0.348	0.286	0.259
Molina, Y	STL	0.273	0.262	0.305
Ortiz, D	BOS	0.25	0.27	0.309
Pena, C	CHC	0.237	0.196	0.225
Pence, H	HOU	0.323	0.282	0.314
Peralta, J	DET	0.197	0.249	0.299

TABLE 6 (CONT.)

Player	Team	*Preseason 2011* AVG	*Regular 2010* AVG	*Regular 2011* AVG
Pierre, J	CWS	0.258	0.275	0.279
Prado, M	ATL	0.28	0.307	0.26
Pujols, A	STL	0.288	0.312	0.299
Ramirez, A	CWS	0.266	0.282	0.269
Rasmus, C	STL	0.265	0.276	0.225
Reynolds, M	BAL	0.232	0.198	0.221
Rios, A	CWS	0.29	0.284	0.227
Sanchez, G	FLA	0.368	0.273	0.266
Soriano, A	CHC	0.219	0.258	0.244
Stubbs, D	CIN	0.259	0.255	0.243
Suzuki, I	SEA	0.259	0.315	0.272
Swisher, N	NYY	0.254	0.288	0.26
Teixeira, M	NYY	0.294	0.256	0.248
Uggla, D	ATL	0.212	0.287	0.233
Upton, B	TB	0.293	0.237	0.243
Upton, J	ARI	0.254	0.273	0.289
Victorino, S	PHI	0.304	0.259	0.279
Weeks, R	MIL	0.442	0.269	0.269
Werth, J	WSH	0.245	0.296	0.232
Wieters, M	BAL	0.283	0.249	0.262
Young, C	ARI	0.292	0.257	0.236
Young, D	PHI	0.258	0.298	0.268
Young, M	TEX	0.38	0.284	0.338

ABOUT THE AUTHOR

Michael R. Summers is a professor of management science at Pepperdine University. He has a BS in Engineering Physics, an MBA, and a PhD in Management Science, all from the University of Illinois. He is the author of a textbook, *Analyzing Operations in Business*, and has written many case studies in operations management, as well as several statistical analyses of sports and a wide variety of applications of quantitative analysis.

U.S. Cross-Generational Variations in Culturally-Oriented Value Systems

Cynthia Pavett
University of San Diego

Much has been written about the changing values that span generational cohorts and how they affect an organization's recruiting and retaining of young talent. Typically, these studies focus on rewards that have been derived from an amalgam of various need theories of motivation. Examples of these rewards include: leisure time, interesting work, status, pay, and altruism. Additionally, a host of studies have looked at both specific and general job satisfaction. Similar to previous studies, the purpose of the present research is to investigate value differences between three work-age generations. However, the current study differs from previous works in that it focuses on underlying values rather than on rewards or attitudes.

INTRODUCTION

From the streets of the Middle East to the shop floor of factories throughout the Midwestern United States, it seems apparent that the value systems of the young differ from those of the previous generations. The current research study examines the similarities and differences in cultural values among three broad generational groups: millennials, generation X and baby-boomers. Since most organizations today employ people from all three groups (Gentry, Griggs, Deal, Mondore & Cox, 2011), differences in values can have a major impact upon a host of work-related preferences such as mode of interaction, leadership style, compensation, and managerial practices.

The generational cohorts are typically defined as "millennials" (born after 1976); "gen Xers" (born between 1964 and 1976) and "baby boomers" (born between 1946 and 1963). Previous research, books and reviews (e.g. Deal, 2007; Zemke, 2001; Dries, Pepermans & De Kerpel, 2008, Hewlett, Sherbin & Sumberg, 2009; and Twenge, Campbell, Hoffman & Lance, 2010) have described or stereotyped these generations and some of the important differences among them. However, none of the above studies have examined differences or similarities in the cultural values that underlie work-related attitudes, work centrality, work and organizational commitment and leadership preferences.

There have been a number of studies examining specific work-related attitudes and expectations. In general, results do not present a consistent picture of potential generational similarities or differences. While various studies have found generational differences in such constructs as "being driven", centrality of work, and expectations of rapid promotions (e.g. Egri & Ralston, 2004; Kupperschmidt, 2000; Smola & Sutton, 2002), others have not. For example, Kowske, Rash and Wiley (2010) used data collected over an 18-year period from a large, diverse sample of employees from the United States. The focus of this study was on examining the effect of generation of work attitudes such as job satisfaction, job security and turnover intentions. The findings indicated that work attitudes differed across generations, although effect sizes were relatively small. Compared with Boomers and gen Xers, millennials reported higher levels of overall company and job satisfaction as well as satisfaction with job security, recognition, career development and advancement. This study also reported homogeneity across the three generations in satisfaction with pay, benefits, the work itself with no differences in turnover intentions. Other studies, such as Davis, Pawlowski & Houston, 2006: Deal, 2007; Gentry, Griggs, Deal & Mondore, 2009, also found similarities across the generations on work involvement, organizational commitment, preferences for learning, and motivational factors. One study, Hewlett et al. (2009) even concluded that there were more similarities between the oldest and youngest generations in the workplace than there were differences. In the most recent study on leadership practices, Gentry, Griggs, Deal, Mondore and Cox (2011) found that the three generations consider the same leadership practices to be important. Similarities were also found in what each generation believed to be important for success in their organizations' leadership practices.

Perhaps the most relevant research, for the present study, is that of Twenge, et al. (2010) since work-related values, rather than attitudes, were the examined. Specifically, these researchers assessed the value each of the three generations placed on a series of rewards that were grouped into five categories: leisure, intrinsic, extrinsic, altruism, and social. This study is unique since it used data collected over a 30-year period. Rather than following the same subjects over this period of time, information was gathered from a representative sample of high-school seniors who fell into each of the three generational categories. This methodology isolated generational from age differences; and important distinction since values can change over time. The most salient findings were that: leisure values increased steadily over the generations; work centrality was valued most highly by the boomers; extrinsic factors (such as status and pay) were valued more highly by the younger two generations than the oldest generation; gen Xers rated social (e.g. making friends) and intrinsic (e.g. interesting work) values significantly lower than did the boomers.

THE THEORETICAL FRAMEWORK

The current pilot study examines these values by using a version of a questionnaire (Maznevski, DiStefano, Gomez, Noorderhaven & Wu, 2002) developed to assess cross-cultural value orientations. The survey, which is based upon the original work of Kluckhohn and Stodtbeck (1961), assesses how each culture responds to the universal problems that societies have faced throughout time. It identifies six problems or challenges that are referred to as cultural orientations. The Cultural Perspectives Questionnaire (Maznevski, et al., 2002) was developed measure five of the six cultural orientations. Briefly defined, these orientations or dimensions are described in the following paragraphs.

Relationship to the Environment

This reflects how people in a society orient themselves to the world around them and to the supernatural. A value of harmony reflects the belief that humans must keep the system in balance, managers must look at all aspects of a business system and engage in small actions to affect alignment and that harmony is paramount in any social system. Mastery**,** the second orientation toward the environment, indicates a belief that people are separated from the world around them and their primary role is to influence and control the environment. This value is accompanied by the belief that there are direct consequences for managers who do not achieve their goals and it is often accompanied by emphasis on short-term accomplishments. The third, and last of these values is called subjugation. While this value is not common in Western societies, it is the belief that the environment is dominated by something other than humans, typically God, fate or a supernatural force. Similar to an external locus of control (Rotter, 1966), it is the belief that life is predetermined or preordained and one should not try to alter the inevitable.

Relationships among People

Relationships among People, a construct that is concerned with issues of power and responsibility, looks at preferences for collectivism, individualism or a hierarchical basis of power. Collectivistic beliefs are characterized by behaviors that view the group as dominant where members look after each other and subordinate their wishes to those of the group. Rules and privileges of the group apply only to members of the group and there is no obligation to help those outside the group (in-group collectivism). It should be noted that the dominant group could be based on extended family, on companies, communities or society.

In contrast, someone with strong individualistic values believes that people look after themselves, make their own decisions and live with the consequences. Status is usually based upon individual achievements, egalitarianism in society is common, and independence is valued. Hierarchical values reflect a belief that people higher in the hierarchy have power over those lower in the hierarchy. Moreover, hierarchical levels tend to be stable over time and in organizations, information is shared only up and down vertical lines.

Basic Mode of Activity

This value is concerned with the desirable focus of activity. A doing orientation is manifested by a desire to constantly strive to achieve and a compulsion to accomplish things through hard work and action. Secondly, a strong value of thinking places high value on being rational and carefully thinking everything through before taking action. There is a focus on careful engineering and planning. Lastly, a being orientation is characterized by spontaneity where the present is experienced to its fullest and people are expected to act out their feelings as they experience them. Punctuality is less important than paying attention to the present.

Belief about Basic Human Nature

Belief about Basic Human Nature reflects one's beliefs about the character of the behavior and malleability of the human species. If people are viewed as basically evil, then people cannot be trusted and control system are used to prevent theft and fraud. Alternatively, if human nature is viewed as good and trustworthy, then when left on their own, people will behave ethically.

Orientation in Time

The last of the five values and involves a general orientation toward time and how people think about or use specific units of time. A past orientation indicates that people respond to a new challenge by looking to tradition and problems are solved based upon what has worked in the past. Hence, history is used as a guide for future behaviors and the society takes great pride in its history. A present orientation is characterized by making decisions to resolve a current situation without thoroughly examining its future impact. An emphasis is placed on concern for the immediate effects of an action and planning horizons are relatively short – generally, one or two years. Hence, reward systems that focus on short-term (quarterly) results are valued. The future orientation emphasizes examining the possible consequences of an action for its future implications. Long term planning is valued and as are reward systems that focus on future returns.

Given the mixed results of the previous research and the exploratory nature of the present study, no specific hypotheses will be delineated. Rather, this cross-sectional pilot study will examine inter-generational values and draw upon past research to discuss the results.

METHOD

Participants

The survey was administered to a convince sample of 158 representatives from all three generational groups. The 44 baby-boomers are all full-time employees from a wide range of organizations; the 33 gen Xers are also employed and drawn mainly from a diverse group of students who are enrolled in various Master's degree programs in business administration at a private university; the 71 millennials consist primarily of undergraduate business administration students.

Measures and Procedures

The survey, which is based upon the Cultural Perspectives Questionnaire (Maznevski, et al., 2002), consists of 89 questions assessing the five cultural values described above. The only demographics included in this pilot study were gender, age and employment in the public (government) or private sectors. Regarding gender, only 108 of the respondents provided this information.

The survey was administered electronically such that no individual response could be identified unless desired by the respondent. A cover letter explained the intent of the study and participation for the baby-boomers was strictly voluntary. For the students, however, while their permission was obtained to anonymously use the results, taking the survey was a requirement for the class.

The main analyses conducted in this study were a series of ANOVA to ascertain differences between the responses of the three generational cohorts across the value dimensions. Separate ANOVAs were run for each of the five main value categories. Tukey post-hoc multiple comparison tests were done to isolate pairwise significant differences. Additionally, simple independent pair's t-tests were conducted to ascertain the differences in values for the two demographic groups: gender and government employment.

RESULTS

The overall means and standard deviations for the entire sample are presented in Table 1. Under each of the five value orientations, the highest number represents the relative dominance of the value subcategory. In general, the results are similar to those of the most recent study examining cross-cultural values in twenty-five countries, including the United States. The GLOBE studies (Chhokar, Brodbek & House, 2007), which were based upon a survey administered in 825 companies in 62 countries, defined nine values that are similar to those used in the present study.

TABLE 1
DESCRIPTIVE STATISTICS ON VALUE ORIENTATIONS FOR THE SAMPLE[1]

Dimension	Mean	SD
Environment		
Harmony	4.72	.69
Mastery	5.10	.71
Subjugation	2.70	.85
People		
Collective	4.59	.79
Hierarchical	4.55	.72
Individual	5.11	.73
Activity		
Being	3.80	.81
Doing	4.98	.81
Thinking	4.62	.92
Humans		
Evil	3.15	1.47
Good	4.08	1.07
Time		
Past	5.13	.83
Present	3.80	.87
Future	4.43	.93

[1]N = 148

The results of Table 1 mirror these findings. For example, the high average score for mastery is similar to the Chhokar; et al.'s finding that the U.S. rated high in assertiveness. Both studies found relatively high scores for individualism, and a doing (or performance) orientation. Unlike the GLOBE (2007) studies, the current results indicate a past orientation and suggest that the respondents' view of human nature is basically good.

To examine the potential of a linear relationship between the relative importances of the 14 values contained in the five general orientations, simple correlation were conducted. The results, which are presented in Table 2, produced only three significant correlations: an inverse relationship between age and being, and viewing man as evil. A positive relationship occurred between age and a belief that human nature is basically good.

TABLE 2
CORRELATIONS BETWEEN AGE AND VALUE ORIENTATIONS

Dimension	Correlation
Environment	
Harmony	-.11
Mastery	.02
Subjugation	.08
People	
Collective	-.09
Hierarchical	-.05
Individual	.03
Activity	
Being	-.38**
Doing	-.01
Thinking	-.05
Humans	
Evil	-.22**
Good	.17*
Time	
Past	-.04
Present	-.19*
Future	.03

*$p \leq .05$; ** $p \leq .01$

The main research question of this paper is, of course, the differences in value orientations between the three generational groups. Simple analysis of variance (ANOVA) tests were conducted on each of the value orientations for each of the three generational cohorts. (See Table 3)

Results of the ANOVA's are seen in Table 3. Only four significant and two near-significant results were found. In terms of relation to people, both the Millennials and Baby Boomers had significantly higher scores than did the gen Xers in their preference for hierarchy. On a similar note, the Boomer generation placed somewhat more value (p=.09) on individualism than did the other two cohorts. When examining the results for activity orientation, significant differences were found between the three generations with the Millennials reporting higher preferences for being than did the gen Xers or the Boomers. Also, in the same value category, the Boomers significantly preferred doing more so than did the other two generational cohorts. With respect to their views on the nature of man, near significance (p=.09), the Millennials rated people as more evil than did either the gen Xers or the Boomers. Significant differences were obtained for the three groups on the present-orientation relation to time. The Millennials placed significantly more importance on the present than did the gen Xers or the Boomers. It should be noted that all of the above differences and attending significance levels were confirmed in the Tukey post-hoc multiple comparison tests.

TABLE 3
ANOVA OF VALUE ORIENTATIONS BY GENERATIONAL COHORT

Value	Mean	S.D.	F.	Sig.

Harmony				
Millennials[1]	4.78	.74		
Gen X'ers[2]	4.70	.55		
Baby Boomers[3]	4.65	.71		
			.486	.61
Mastery				
Millennials	5.10	.71		
Gen Xers	4.93	.74		
Baby Boomers	5.24	.71		
			1.84	.16
Subjugation				
Millennials	2.64	.88		
Gen Xers	2.63	.63		
Baby Boomers	2.80	.93		
			.53	.59
Collective				
Millennials	4.69	.81		
Gen Xers	4.53	.71		
Baby Boomers	4.50	.81		
			.99	.37
Hierarchical				
Millennials	4.64	.74		
Gen Xers	4.27	.58		
Baby Boomers	4.63	.75		
			3.43	.03
Individual				
Millennials	5.10	.80		
Gen Xers	4.91	.73		
Baby Boomers	5.27	.57		
			2.41	.09
Being				
Millennials	4.04	.75		
Gen Xers	3.85	.93		
Baby Boomers	3.36	.63		
			11.00	.00
Doing				
Millennials	5.05	.85		
Gen Xers	4.59	.68		
Baby Boomers	5.13	.76		
			4.98	.00
Thinking				
Millennials	4.62	.88		
Gen Xers	4.74	.85		
Baby Boomers	4.51	1.02		

			6.43	.53
Evil				
Millennials	3.39	1.41		
Gen Xers	3.09	1.52		
Baby Boomers	2.80	1.44		
			2.36	.09
Good				
Millennials	3.90	1.17		
Gen Xers	4.20	.92		
Baby Boomers	4.29	.96		
			4.98	.13
Past				
Millennials	5.20	.86		
Gen Xers	4.95	.62		
Baby Boomers	5.16	.89		
			1.04	.36
Present				
Millennials	3.99	.72		
Gen Xers	3.53	.90		
Baby Boomers	3.70	.99		
			3.85	.02
Future				
Millennials	4.40	.90		
Gen Xers	4.47	.91		
Baby Boomers	4.46	.99		
			0.10	.90

[1]N = 71: [2]N =33; [3]N = 44

To examine the potential impact of the choice to work for the government (e.g. civil service, military), independent sample two-tail t-tests were conducted across all of the values. Results, which are delineated in Table 4, indicated just a few differences. Government workers scores somewhat higher in their views of subjugation (p=.09) than did non-government respondents.

On the three values reflecting activity orientation, non-government workers scored somewhat higher (p=.08) than did non-government workers in the category of being. People were viewed as significantly more evil and less good by the non-government workers. Lastly, the respondents who worked for the government, had a significantly higher future orientation than did the comparison group

Lastly, the conjecture that gender might impact upon reported values was also examined by the use of independent sample two-tail t-tests. Here, again, very few differences were found. (See Table 5)

TABLE 4

COMPARISON OF MEAN SCORES FOR GOVERNMENT AND NON-GOVERNMENT EMPLOYEES

Dimension	Mean Non-Gov.[1]	S.D.	Mean Gov.[2]	S.D.	t-value	2-tail sig.
Environment						
Harmony	5.34	5.65	4.70	.61	.65	.62
Mastery	5.12	.71	5.08	.71	1.04	.19
Subjugation	2.60	.82	2.83	.71	-1.68	.09
People						
Collective	4.57	.79	4.62	.79	-.63	.71
Hierarchical	4.52	.73	4.58	.70	-.47	.64
Individual	5.09	.71	5.13	.76	-.39	.70
Activity						
Being	3.90	.81	3.67	.80	1.74	.08
Doing	4.92	.80	4.96	.82	.14	.89
Thinking	4.55	.92	4.71	.91	-1.04	.30
Humans						
Evil	3.39	1.51	2.84	1.34	2.33	.02
Good	3.89	1.11	4.35	.95	-2.73	.00
Time						
Past	5.12	.86	5.14	.80	-.17	.86
Present	3.89	.83	3.69	.98	1.40	.17
Future	4.30	.92	4.60	.90	-1.95	.05

[1] N for non-government employees = 83; [2]N for government employees = 65

TABLE 5
COMPARISON OF MEAN SCORES FOR MALES AND FEMALES

Dimension	Mean Males.[1]	S.D.	Mean Females[2]	S.D.	t-value	2-tail sig.
Environment						
Harmony	4.89	.70	5.61	5.19	-.70	.48
Mastery	5.08	.72	5.02	.70	.41	.68
Subjugation	2.70	.82	2.58	.82	.75	.45
People						
Collective	4.69	.80	4.52	.69	1.18	.24
Hierarchical	4.64	.77	4.46	.70	1.27	.21
Individual	5.07	.76	5.05	.72	.91	.85
Activity						
Being	4.16	.77	3.70	.81	2.93	.00
Doing	5.09	.80	4.84	.86	1.59	.11
Thinking	4.73	.79	4.40	1.01	1.83	.06
Humans						
Evil	3.51	1.53	3.11	1.51	1.34	.18
Good	3.89	1.15	3.96	1.06	-.32	.79
Time						
Past	5.19	.81	5.11	.85	.57	.57
Present	4.00	.80	3.79	.77	1.35	.17
Future	4.36	.82	4.19	1.01	.92	.36

[1]N Males = 57; [2]N Females = 51

Of the fourteen values, only two reached any modicum of significance. Males rated the activity orientation of "being" significantly higher than did females but also rated thinking somewhat (p=.06) higher than did the women. Implications of the current paper's results for managing people will be discussed in the context of preferences for leadership style, motivation and interaction style. Additionally, the obvious limitations of this pilot study will also be elucidated.

DISCUSSION

While the results of this pilot study yielded few significant results with respect to general differences in cultural values, several noteworthy conclusions can be drawn. First, the overall sample's values closely mirror those of previous, older studies on similar values. For example, Hofstede's (2007) data clearly indicated that, when compared with other countries, the U.S.A. is extremely individualistic. This same contention can be found in the cross-cultural works of Kluckhohn & Strodtbeck (1961) and Trompenaars & Hampden-Turner (1998). That Americans, as a whole, value both mastery and a "doing" orientation are also supported by these previous studies. In contrast, the same support is not garnered for the purported value of viewing man a basically good. With respect to time orientation, the current study indicated that the past was more highly valued that the present or the future. This finding is the total opposite of the classic cross-cultural studies that characterize Americans as present-oriented. However, it could be argued that this finding is due, in part, to the preponderance of Boomers in the current sample.

With respect to generational differences, the results are similar to a score of past research that examined a host of work-related values and altitudes. Basically, there are similarities and differences between the three generational groups. Several studies have concluded that the Millennials are more individualistic and self-focused than the older generations (e.g. Sessa, Kabacoff, Deal, & Brown, 2007; Sirias, Karp, & Brotherton, 2007; Twenge & Campbell, 2001, 2009; Twenge, Konrath, Foster, Campbell & Bushman, 2008). These conclusions have inspired researchers to label Millennials as *Generation Me.* While the current study did confirm that individualism was the dominant value, within the category of relationship to people, for the Millennials, their scores were similar to those of the previous generations. Within this same category, it was surprising that significant differences were found between the generations in the preference for a hierarchical arrangement of people. Specifically, both the Boomers and the Millennials had a significantly stronger preference for this arrangement than did the gen Xers. This result is not too dissimilar from those of two other cross-sectional studies that found the Millennials placed importance on gaining status (Cennamo & Gardner, 2008; Wong, Gardiner, Lang & Coulon, 2008) which can be obtained via position or hierarchical power. Since this group of young people was just starting their careers, the result also implies that they may place importance on gaining status through their achievements. As indicated in the current results for the values category of activity orientation, the Millennials placed the highest value on doing as opposed to thinking or being. In sharp contrast, the Millennials also like to "chill" more so than their predecessors since their score on "being" was significantly higher than the other two generations. However, this contradiction is consistent with the findings of Twenge, et al. (2010) that Millennials place strong value on leisure time as a potential organizational reward yet they are required to work long hours and maintain an active (real or virtual-time) social life.

That the Boomers placed more value on individualism than did the gen Xers is not surprising given the era in which they were value processed. This generation grew up with the civil rights movement, protests against the Vietnam War and the "age of peace and love". What is surprising in the current results is that the Boomers also placed more value on hierarchy than did the gen Xers. This is a seeming contradiction to the rebellious nature of their earlier years.

With respect to the lower score on individualism for the gen Xers, their generation witnessed had a substantially higher chance of coming from broken homes and the age of downsizing with its subsequent loss of their parents' jobs (Beutell & Wittig-Berman, 2008). This cohort, along with their subsequent cohort, is living with economic conditions where long work hours and the necessity of a dual-income household are necessities (Twenge, et al., 2010). These influences could potentially have impacted on their belief that status is based upon individual achievement – a component of individualism.

The most predictable of the differences between the values of the three generational cohorts is in the category of time orientation. The Millennials placed significantly more emphasis on the present than did the other generations. Even though, as indicated in the results, this was not their dominant value, it does indicate that their decisions are made without regard to future implications. Again, this result stands in contrast with the reported emphasis placed on a past time orientation: looking to the past as a guide for current decisions. Hence, even though the youngest generation placed more value on living in the present than did their predecessors, they still use history and tradition as the basis for their decisions.

In spite of the few differences discussed above, the current study clearly indicates that there are many similarities between the generations. As previously mentioned, most of the research in this area is fraught with seeming contradictions and mixed results (e.g. Kowske, et al., 2010; Twenge, et al., 2010). There are both similarities and differences between the generations with respect to work values, attitudes and personality traits. The only consistent thread running through the studies appears to be the fact that the youngest generation values its leisure time. This is no great surprise and many organizations, especially the fast-paced high-tech ones such as Apple and Google, have incorporated opportunities for leisure into the workplace.

The last two analyses, which examined the difference between government and private sector respondents and males and females, were based more on conjecture than previous literature. Since the sample consisted of an almost equal number of people employed in the public and private sectors, this study was designed to examine the potential differences between the two groups. Results yielded more similarities than differences indicating that the nature of the employer had little impact upon the overall emphasis placed upon the fourteen values. The only surprising result was that the government employees, who included a fair number of active-duty military, viewed the nature of man as good rather than evil. When looking at the potential differences between males and females, again, few significant results emerged. While both genders rated their activity orientation as doing, males placed greater importance on "being" than did the females. Again, this was not the dominant value for either gender but merely indicated that males valued their leisure time more than did the females.

LIMITATIONS

Since this was a pilot study, it has several notable limitations. First, the sample size was limited and hence, conclusions for the general population cannot be drawn. Secondly, this was a convenience sample. While it consisted of a variety of people who were in various stages in their careers, it is not a representative sample. In addition to the limitations imposed by the sample, the survey that was used was designed to examine cross-cultural values rather than those of a group from the same, albeit diverse, culture. All respondents were Americans even though they may have come from any number of ethnic backgrounds. The current study did not assess ethnicity. Lastly, the study was cross-sectional in nature. The ideal design for a study of generational differences is a sequential cohort design, similar to that used by Twenge, et al., (2010), that follows several generations longitudinally as they move through their working lives.

Future research that is conducted within a single country should draw on a large, representative sample in which ethnicity is assessed. Additionally, the ideal study would follow the advice of Schaie (1965) to assess values longitudinally.

In spite of its obvious limitations, the current study does add to the body of research on values across generations. It is distinct in that it looked at culturally-based values rather than rewards, personality or attitudes. This pilot study corroborates the body of generational research in its findings that there are both similarities and differences across generational cohorts.

REFERENCES

Beutell, N. & Wittig-Berman, U. (2008). Work-family conflict and work-family synergy for generations X, baby boomers and matures. *Journal of Managerial Psychology, 23*, 507-523.

Cennamo, L. & Gardner, D. (2008). Generational differences in work values, outcomes and person-organization values fit. *Journal of Managerial Psychology, 23,* 891-906.

Chhokar, J., Brodbek, C., & House, R. (2007). Culture and Leadership across the World: the GLOBE Book of in-depth Studies of 25 Societies. Mahwah, N.J.: Lawrence Erlbaum Associates.

Davis, J.B., Pawlowski, S.D., & Houston, A. (2006). Work commitments of baby boomers and GenXers in the IT profession: Generational differences or myth? *Journal of Computer Information Systems, 46,* 43-49.

Deal, J. (2007). Retiring the generation gap: How employees young and old can find common ground. San Francisco: Jossey-Bass.

Dries, N., Pepermans, R. & De Kerpel, E. (2008). Exploring four generations' beliefs about career: Is "satisfied" the new "successful"? *Journal of Managerial Psychology, 23,* 907-928.

Egri, C. P. & Ralston, D. A. (2004). Generation cohorts and personal values: A comparison of China and the U.S. *Organizational Science, 15,* 210-220.

Gentry, W. A., Griggs, T. L., Deal, J. J. & Mondore, S. P. (2009). Generational differences in attitudes, beliefs, and preferences about development and learning at work. In S. G. Baugh & S. E. Sullivan (Eds.) Research in careers: Vol.1. Maintaining focus, energy, and options over the life span. (pp. 51-73). Charlotte, NC: Information Age.

Gentry, W. A., Griggs, T. L., & Mondore, S. P & Cox, B. D. (2011). A comparison of generational differences in endorsement of leadership practices with actual leadership skill level. *Consulting Psychology Journal: Practice and Research, 69,* 39-49.

Hewlett, S. A., Sherbin, L. & Sumberg, K. (2009, July-August). How Gen Y & Boomers will reshape your agenda. *Harvard Business Review, 87,* 71-76.

Hofstede, G. (2001). Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations (2nd edition). Thousand Oaks, CA: Sage.

Kluckhohn, F. R. and Stodtbeck, F. L. (1961). Variations in value orientations. New York, Row, Peterson & Company.

Kowske, B., Rasch, R. & Wiley, J. (2010). Millennials' (Lack of) attitude problem: An empirical examination of generational effects on work attitudes. *Journal of Business Psychology,* 25, 265-279.

Kupperschmidt, B. R. (2000). Multigenerational employees: Strategies for effective management. *The Health Care Manager, 19,* 65-76.

Maznevski, M. L., DiStefano, J.J., Gomez, C.B., Noorderhaven, N.G. & Wu, P.C. (2002). Cultural dimensions at the individual level of analysis: The cultural orientations framework. *International Journal of Cross-Cultural Management, 2,* 275-295.

Rotter, J. (1966). Generalized expectancies for internal versus external control of reinforcements. *Psychological Monographs,* 80, 1-28.

Schaie, K. (1965). A general model for the stud of developmental problems. *Psychological Bulletin, 64,* 92-107.

Sessa, V., Kabacoff, R., Deal, J., & Brown, H. (2007). Generational differences in leader values and leadership behaviors. *Psychologist-Manager Journal, 10,* 47-74.

Sirias, D., Karp, H., & Brotherton, T. (2007). Comparing the levels of individualism/collectivism between baby boomers and generation X. *Management Research News, 30*, 749-761.

Smola, K. W. & Sutton, C. D. (2002). Generational differences: Revisiting generational work values for the new millennium. *Journal or Organizational Behavior, 23,* 363-382.

Trompenaars, F. & Hampden-Turner, C. (1998). Riding the waves of culture: Understanding cultural diversity in global business (2nd edition). New York: McGraw Hill.

Twenge, J., Campbell, W. (2001). Age and birth cohort differences in self-esteem: A cross-temporal meta-analysis. *Personality and Social Psychology Review, 5*3, 21-344.

Twenge, J., Campbell, S., Hoffman, B., & Lance, C. (2010). Generational differences in work values: Leisure and extrinsic values increasing, social and intrinsic values decreasing. *Journal of Management, 36*, 1117-1142.

Twenge, J., Konrath, S., Foster, J., Campbell, W. & Bushman, B. (2008). Egos inflating over time: A cross-temporal meta-analysis of the Narcissistic Personality Inventory. *Journal of Personality, 76*, 87-901.

Wong, M., Gardiner, E. Lang, W. & Coulon, L. (2008). Generational differences in personality and motivation: Do they exist and what are the implications for the workplace? *Journal of Managerial Psychology, 23,* 878-890.

Zemke, R. (2001). Here come the Millennials, *Training, 38*, 44-49.

Revisiting Hofstede's Dimensions: Examining the Cultural Convergence of the United States and Japan

Erich B. Bergiel
University of West Georgia

Blaise J. Bergiel
University of West Georgia

John W. Upson
University of West Georgia

It has been over forty years since Hofstede's groundbreaking study on cultural values. Since then, there have been drastic changes to the global landscape influenced by political, environmental, and technological factors. Utilizing Cultural Convergence Theory we suggest that increased similarities can be observed in cultures with strong international linkages. Specifically, this study utilized the new Value Survey Module 08 to test theoretically justified hypotheses examining the cultural convergence of the United States and Japan. Results suggest interesting changes have occurred in these cultures, to include a strong trend towards convergence. Implications as well as directions for future research are discussed.

INTRODUCTION

Success in the global market depends on understanding the cultures you are doing business with. For this reason, studies on work-related cultural values continue to show prominence in both industrial and organizational research. The framework for most of this research can be attributed to Geert Hofstede and his initial four dimensions of cultural values, as well as his Value Survey Module (VSM) to capture these dimensions (Hofstede, 1984). The reviews of cross-cultural studies have suggested that Hofstede-inspired research is increasing exponentially (Taras, Kirkman & Steel, 2010). The intent of this current study is to continue this trend while attempting to address potential short-comings in recent cross-cultural research.

The most prevalent short-coming is that researchers still reference Hofstede's original findings or outdated versions of the VSM for empirical or theoretical support. The challenge of cross-cultural research is to attempt to stay abreast of evolving cultures by evolving our methods of analysis and observation as well. The latest iteration of the VSM has three additional dimensions that were not measured in the original module. However few researchers have utilized this tool to assess values across cultures. To adequately advance cross-cultural research it is essential to use the most advanced available methods.

In order to accomplish this we have two primary objectives. First, this study has collected data from the United States and Japan in order to provide updated information on work-related values of these two cultures. The data was collected to test theoretically justified hypothesis that state that countries with strong international ties like the United States and Japan will undoubtedly inflict their own values and beliefs on the evolving culture of the other, potentially causing a convergence of these two cultures. Second, the data was collected using the most recent VSM 08. The researchers undertook the task of both conducting the initial translation of the VSM 08 into Japanese and collecting the first results from Japanese respondents. Cultures evolve and so should the methods used to assess them. The VSM 08 is the most current method and this study will not only provide an additional translation of the VSM 08 but it will also further validate it as an assessment tool.

A REVIEW OF HOFSTEDE'S VALUE DIMENSIONS

In Hofstede's original study data was collected from a large multinational business corporation (IBM) with subsidiaries in 64 countries. The data consisted of answers to questions about their values and perceptions of their work situation. Careful post-analysis of the initial and subsequent surveys started to show a "global structure" that could not be suppressed by the idiosyncrasies of the individual countries (Hofstede et al., 1990, p. 288). This initial structure consisted of four individual cultural value dimensions.

The first dimension is power distance. According to Hofstede (1984), power distance is the extent to which the less powerful individuals in a society accept inequality in power and consider it as normal. In high power distance cultures, individuals respect their superiors and avoid criticizing them. In low power distance countries, it is very acceptable to challenge superiors, albeit with respect. The second dimension is individualism – collectivism, which reflects the degree to which a society views its members as individuals or as group members (Hofstede, 1984). In individualistic societies, individuals are primarily concerned with their own interests and the interests of their immediate family. In highly collectivistic societies, individuals are not defined by their own actions but rather the groups' actions. The third dimension is masculinity – femininity, with masculinity described as cultures where the dominant values are expected to be ambitious, assertive, and competitive. In contrast, in cultures high in femininity there is a dominance of feminine values such as preference for "friendly atmosphere, position security, physical conditions [and] security" (Hofstede, 2001, p.281). Fourth, uncertainty avoidance is the degree to which people in a culture generally prefer structure to risk (Hofstede, 1984). Cultures high in uncertainty avoidance are made anxious by situations that are unstructured, unclear, or unpredictable. On the other hand, cultures low in uncertainty avoidance are reflective, less aggressive, relatively tolerant, and unemotional.

Subsequent research initiated by Michael Harris Bond (Chinese Culture Connection, 1987) revealed a fifth meaningful dimension. This dimension originally labeled "Confucian dynamism" represented the opposing views time orientation has on life and work (Hofstede et al., 1990). This dimension, later termed long-term orientation, refers to the preference for instant reward versus delayed reward (Hofstede & Bond, 1988). More recently, Minkov (2007) proposed three new dimensions: Exclusionism – Universalism, Indulgence – Restraint, and Monumentalism – Flexhumity. From these, post-analysis found that exclusionism – universalism was strongly correlated with power distance and collectivism so it was not been treated as a new dimension. However, the remaining dimensions were. The indulgence – restraint dimension considers indulgence as the value that a society places on relatively free gratification of desires and feelings (Fontaine et al. 2005). Opposite indulgence is restraint, or the values which control such gratification and place limits on individuals' enjoyment behaviors. Monumentalism refers to the cultural dimension characterized on one extreme by self-enhancement (a tendency to seek positive information about oneself) and self-stability or self-consistency (a conviction that one should have unchangeable values, beliefs and behaviors that are not influenced by shifting circumstances) (Heine, 2003). At the other extreme are flexhumble cultures. Flexhumity is characterized by humility, flexibility and adaptability to changing circumstances (Hofstede & Minkov, 2010).

Hofstede released the most recent Values Survey Module in 2008 (VSM 08). In this survey, Hofstede measured his five dimensions of culture, and included the two additional dimensions he derived from Michael Minkov (Hofstede, Hofstede, Minkov & Vinken, 2008, p. 2). We argue that as cultures evolve they must constantly be assessed with respect to each of Hofstede's seven cultural dimensions. We base the argument on the belief that culture is dynamic and evolving due to influential interactions with other cultures, a belief rooted in Cultural Convergence Theory (Barnett & Kincaid, 1983).

THE DYNAMICS AND CONVERGENCE OF CULTURAL

Societies have evolved into groups with distinguishable characteristics that set them apart from other groups (House, Javidan, Hanges, & Dorfman, 2002). One distinguishing characteristic is culture. Hofestede (1980, p. 25) states that culture is "the collective programming of the mind which distinguishes the members of one human group from another." The national culture is dynamic and is constantly influenced by changes in the environment (technological, political, legal, etc.) which would by all logic influence cultural values.

There are two opposing views of the changing of values within cultures. One view is that culture is very stable within a society and when cultures change they do so independently of each other (Barkema & Vermeulen, 1997). An opposing view of cultural change is *Cultural Convergence Theory*. This theory argues that when different cultures experience frequent interactions, the cultures will become more similar over time (Axelrod, 1997). It is based on the premise that culture is affected by outside influences and external changes. Cultural Convergence Theory is an extension of Convergence Theory or as more aptly known in the realm of the physical sciences, the second law of thermodynamics (Kincaid et al., 1983). This foundational theory states that a physical system cannot be stable if not in equilibrium, and that to become stable the various particles or subsystems of that larger systems must interact and converge to reach an equilibrium state (Sachs, 1973). Progress has been made in adapting convergence theory to chemical, biological and social systems (Prigogine & Nicolis, 1977), and appropriately to study the convergence of cultures (Barnett & Kincaid, 1983). The rationale being that national cultures are essentially subsystems of a larger global system. Cultures are open systems that exchange inputs and outputs with other cultures. Due to globalization this interaction has become essential for survival; if cultures did not interact they could reach that point of entropy. To avoid entropy, when cultures interact they must reach stability through a state of equilibrium, this equilibrium is reached through the convergence of cultures. For example, two cultures that become intermingled through trade or communication can influence each other. Given the strong ties between the U.S. and Japan, and the dependency on each as both a trading partner and global ally, it is apparent that a great deal of interaction occurs between these two cultures. Therefore, with respect to cultural convergence theory, these cultures are becoming more alike over time. In the context of this study, it is proposed that to reach stability and equilibrium, the Japanese culture and the U.S. culture are becoming more similar.

HYPOTHESES DEVELOPMENT

There are signs that the U.S. culture may be influenced by other cultures. One such way is the increasing prevalence of teams and groups in organizations. Concurrently, the traditional Japanese culture has been often viewed as very masculine, collectivist, and long term oriented. However, many years of interaction between Japan and western countries may have led them to become more individualistic, short term oriented and feminist. By utilizing Hofstede's cultural dimensions as a framework, and comparing our result to those of his original sample, we are able to explore and analyze this convergence of these cultures.

Power Distance

Japan is near the world average in power distance, according to Hofstede's studies. However, recent trends suggest that the Japanese are beginning to question those in power more frequently. This change has occurred dramatically in the political arena where there have been no fewer than 14 prime ministers in the last 20 years (Economist, 2010). The recent victory of the Democratic Party of Japan in the 2009 elections was a significant event as the party vowed to diminish the power of the bureaucrats. These displays of power change and willingness to criticize suggest that Japan is becoming less tolerant of power distance, a stance very reflective of the U.S.

In the original data from the IBM survey in the 1970's the U.S. had a value score of 40 and Japan had a value score of 50 on the power distance dimension. Based on our arguments we propose that these value scores will have shifted, and that because of U.S. influence, Japan will exhibit lower power distance.

Hypothesis 1: The cultural values of the U.S. and Japan associated with power distance have become more similar. Specifically, Japan has become lower in power distance which will be more closely aligned with the power distance of the U.S.

Individualism – Collectivism

In previous studies, Japan has tended to lie toward the collectivist end of the individualism – collectivism dimension. Historically, a major factor of Japan's collectivism was its ability to provide full employment to its citizens (Economist, 1994a). However, there are signs that this close relationship between employer and employee is becoming strained. Further, white collar workers are being laid off due to a bloated management system (Schlender, 1994). Other employers are becoming increasingly reliant on "irregular," or temporary, workers (Economist, 1994b), a practice already well-established in the U.S.

The U.S. has historically been a very individualistic society focused on entrepreneurial effort and individual success, but there has been a shift away from the "self-made man" image that America grew up on. Now U.S. culture depends heavily on communal assistance such as social security and welfare. Also, it's more prevalent to see U.S. students and employees in teams and groups (Townsend, DeMarie, & Hendrickson, 1998). We believe that both countries are moving toward a central position on the individualism scale.

The U.S. had a value score of 91 and Japan had a value score of 41 in regards to the individualism – collectivism dimension in Hofstede's original study. It is proposed that convergence has occurred between these cultures as the U.S. has become more collectivist and Japan has become more individualistic.

Hypothesis 2: The cultural values of the U.S. and Japan associated with individualism – collectivism have become more similar. Specifically, Japan has become more individualistic and the U.S. more collectivist.

Masculinity – Femininity

Japan is one of the most masculine countries in the world. In fact, according to Hofstede's original sample Japan is number one in the world in this dimension, but this too is changing. One reason occurred in 1986, when the equal-employment-opportunity legislation removed many legal barriers to women in the workplace. Women now frequent the workplace. This shift in culture is tempered by the fact that 62% of women quit work after their first child (Wei-hsin, 2005). However, more women are choosing to remain in the workforce even after child-birth.

It is becoming much more acceptable in both countries for women and men to perform the same tasks. The U.S. experienced a large part of this change in the early 20th century, but it has just begun to surface in Japanese culture. This may be part of a global cultural trend toward femininity that is affecting both cultures. The results from the original sample show that the U.S. was less masculine with a value score of 62 while Japan had a value score of 91 on the masculinity – femininity dimension. We propose that both cultures will demonstrate higher values of femininity but that convergence will occur because the change to femininity in Japan has been more drastic.

Hypothesis 3: The cultural values of the U.S. and Japan associated with masculinity – femininity have become more similar. Specifically, while Japan and the U.S. have become more feminine, the increased rate of this change in Japan will cause the countries to more closely align on this dimension.

Uncertainty Avoidance

Japanese tend to avoid uncertainty but the current and future work environments may be affecting their tolerance for uncertainty. One possible cause of this change is that manufacturers are leaving Japan. This has limited job opportunities domestically and effectively made Japan a "one-shot society" student have one shot to find employment upon graduation or they are frozen out of the market. This will effectively decrease the number of employees that are loyal to a firm and cause an increase in entrepreneurial traits commonly seen in the U.S.

Traditionally, the U.S. is a bit more risk-seeking; however recent trends may cause its citizens to avoid risk. The stock market decline, housing bubble bust, and recession of 2007-2009 have caused many to seek secure, safe returns with their investments (Telegram & Gazette, 2010). Further, the threat of other nations becoming more economically powerful may cause Americans to develop a defensive and conservative stance in which they seek to avoid uncertainty (Zweig, & Jianhai, 2005).

The U.S. had a score of 46 while Japan scored much higher on the uncertainty avoidance dimension with a score of 89. As proposed, the U.S. has become more risk adverse while Japan has become more risk-seeking. These changes in values will cause a convergence of cultures as their scores become more similar.

Hypothesis 4: The cultural values of the U.S. and Japan associated with uncertainty avoidance have become more similar. Specifically, Japan is lower in uncertainty avoidance while the U.S. is higher in uncertainty avoidance.

Long-Term Orientation

Traditionally a long-term oriented society, Japan is facing factors that may cause its orientation to become more short-term. One major factor is the aging of society. Japan's working-age population has been in decline for almost 15 years (World Economic and Social Survey, 2007). The effects of an aging society will therefore be felt greater in Japan than in most countries. Fewer working individuals will be taking care of an increasing number of elderly citizens. It is likely that retirement benefits will decrease. Younger workers may begin to focus on life in the short-term as the long-term becomes less attractive. Consequently, as economic power has shifted to the east the U.S. has had to become equally acceptable of Japan's long-term focus as they commonly take time to ponder decisions. Originally, Japan scored high on this dimension with a score of 77, while the U.S. only scored a 29. We propose that as both cultures have attempted to adapt to the needs of the other, their time orientation has become more similar.

Hypothesis 5: The cultural values of the U.S. and Japan associated with long-term orientation have become more similar. Specifically, Japan will have lower long-term orientation while the U.S. will have higher long-term orientation.

Indulgence – Restraint

The Japanese are known as savers (Hayashi, 1986), so much so that the government is considering financial services and social security reforms focused at persuading the elderly to release some of their ¥1,500 trillion in household savings (Economist, 2010). The U.S. is a country where it is not frowned upon to enjoy oneself. Overspending on cars and luxury is considered part of life. Because this dimension has no previous measurement, we cannot judge the movement of this cultural dimension over time. However, we do propose that Japan demonstrates values that resemble those described by indulgence and that the values of the U.S. are much more representative of restraint.

Hypothesis 6: Japan's values will score lower than the U.S. on the indulgence – restraint dimension. Specifically, Japan will demonstrate more restraint while the U.S. will demonstrate more indulgence.

Monumentalism – Flexhumity

Japan has a traditionally flexhumble culture. Individuals in Japan attribute success to external factors and failure to internal factors. Recent trends suggest that Japan is remaining true to their flexhumility traits. At least a few big firms, Sony and Nissan, have hired outside leaders as they face severe competition from abroad (Holstein, 2002). These leaders have had to battle with corporate culture to formulate their turnaround strategies. In the US, success is the result of ability or talent and failure the result of bad luck, other's errors, or lack of effort. This means that individuals from the U.S. tend to overestimate their own uniqueness. Therefore, the U.S. should fall toward the monumentalism end of the scale. As mentioned this dimension has no previous measurement, so once again we hypothesize as to where the U.S. and Japan will fall on the scale in relation to one another. Given the above argument we feel the U.S. values are more representative of monumentalism and the values of Japan are more representative of flexhumity.

Hypothesis 7: Japan's values will score lower than the U.S. on the monumentalism – flexhumity dimension. Specifically, Japan will be more flexhumble and the U.S. will be more monumental.

METHODS

Sample and Procedures

The survey was administered to undergraduate students from a midsize university in the southeastern part of the United States and undergraduate students from a midsize university in southern Japan. Once the surveys were collected, and those surveys that contained responses from students with nationalities other than American or Japanese were removed, a total of 237 (N=237) responses were deemed acceptable. Of these, 107 (n=107) represented responses from the students from the United States and 130 (n=130) responses represented students from Japan. Hofstede et al., (2008) recommended that for statistical purposes an ideal size for a homogenous sample would be fifty, our sample far exceeds this criteria.

The samples for this study were selected based on Frey's (1970) three criteria of accessibility, functional equivalence, and representativeness. While equivalence is not absolutely vital for cross-national surveys (Wu, 2006), an attempt was made to match the samples from these two cultures as much as possible. Functionally, the samples were equivalent because they were all students from mid-size universities from their respective countries. Demographic data collected strengthened the argument of equivalence for this sample. 31% of Japanese respondents were female while 50% of U.S. respondents were female. The majority of respondents from both countries indicated that they were between the ages of 20-24 (65% of Japanese respondents and 86% of U.S. respondents). And finally, 33% of Japanese respondents had at least 15 years of schooling while 34% of U.S. respondents had at least 16 years of schooling.

Research Instrument

The instrument used to assess our hypothesized dimensions of culture was Hofstede's Value Survey Model 2008 (VSM 08). It is a 34-item paper-and-pencil questionnaire developed for comparing cultural values of similar respondents from two or more countries. Respondents indicate their answers using a 5-point likert scale. The VSM 08 assesses seven dimensions of culture on the basis of four questions per dimension. These dimensions include: power distance, individualism – collectivism, uncertainty avoidance, masculinity – femininity, and long-term orientation. The other two dimensions were added based on the work of Minkov (2007) for experimental purposes in an attempt to capture dimension not yet covered in previous modules. These dimensions include: indulgence – restraint and monumentalism – flexhumity. The score for each dimension is calculated utilizing a formula derived by Hofstede so that results in most instances will approximate between 0-100. Included in the formula is a constant to be utilized for 'anchoring' scores which will be described later. The remaining questions ask for demographic information from respondents.

Prior to the VSM 08 was the VSM 94, which was used extensively for 14 years. The VSM 08 is touted as a more complete, yet less complex version of the VSM. However, current reliability and validity of the VSM 08 has to be "taken for granted" (Hofstede, et al., 2008, pg. 10). As Hofstede et al., (2008) describes country-level correlations differ from individual level correlations, and thus a reliability test like Cronbach's alpha should not be based on individual scores but country mean scores. Additional utilization and testing of the VSM 08 will be needed to accomplish this.

At the onset of this research the VSM 08 was not available in Japanese. Thus the researchers undertook the task of providing that initial translation. To accomplish this a Japanese graduate student translated the English version of the VSM 08 into Japanese. The survey was then back-translated into English by a

Japanese professor. After some minor adjustments and a few pilot surveys were administered, the English and Japanese version of the questionnaires appeared to match and all criteria for Brislin's (1970) rules for back-translation were met.

ANALYSIS AND RESULTS

A drawback of cross-cultural research is the inability to make direct comparisons. The VSM 08 is not for comparing individuals or even organizations across national cultures. In addition results cannot be compared to published scores (Hofstede et al., 2008). Essential to the VSM 08 is that comparisons be made between matched samples of respondents who are as similar as possible in all criteria other than nationality. The original study was done using subsidiaries of IBM, a matched sample is virtually impossible since it was conducted around 1970. It is suggested that extensions of this research should include two or more matched samples from different countries with one of these countries being from the original IBM set. The new data can then be 'anchored' to the existing framework by shifting the new data by the differences of the old and new scores for the common country. We chose to anchor our U.S. scores from our current sample to those of the original IBM set. Consequently, while convergence or divergence of values can be observed, specific shifts in independent country values will be undetectable. Therefore, the results explained below and shown in Table 1, though very exploratory in nature should still provide important insight into potential shifts in cultural values.

TABLE 1
COMPARISON OF CULTURAL VALUES OF THE U.S. AND JAPAN

	Original Sample			Current Sample		
Value Dimensions	U.S.	Japan	Difference	U.S.*	Japan	Difference
Power Distance	40	50	-10	40	20.8	19.2
Individualism - Collectivism	91	41	50	91	108.85	-17.85
Masculinity – Femininity	62	91	-29	62	26.65	35.35
Uncertainty Avoidance	46	89	-43	46	110	-64
Long-Term Orientation	29	77	-48	29	42.1	-13.1
Indulgence – Restraint	N/A	N/A	N/A	82.7	57.85	24.85
Monumentalism - Flexhumity	N/A	N/A	N/A	89.1	34.55	113.65
*Data was anchored to the original U.S. sample results						

Power Distance

From the original IBM set there was a difference of -10 between the scores of the U.S. and Japan. Our current results show a difference of 19.2 between the U.S. and Japan. Though Hypothesis 1 is not supported due to increased divergence, the divergence that has occurred is potentially the result of hypothesized shifts. From the results, power distance values are now higher in the U.S. than they are in Japan. While we cannot determine whether one or both cultures experience a shift in values, a trend towards convergence has occurred.

Individualism – Collectivism

The U.S. values have always been very individualistic while Japan was always considered very collectivist. The results for this dimension were probably the most surprising. It appears that a great deal of convergence between the U.S. and Japan in regards to individualism – collectivism has occurred. The original difference was 50 while our results show a difference of -17.85, providing partial support to Hypothesis 2. Again, while we are unable to determine exactly how much each culture or cultures have changed, it is interesting to note that these results suggest that Japan is now more individualistic than the U.S.

Masculinity – Femininity

For this dimension we hypothesized that both the U.S. and Japan would demonstrate more feministic values. Yet, we felt that the changes would have occurred more quickly in Japan so that a convergence of cultures would be noticed. The difference for the original sample by Hofstede was -29 and the difference for our current sample is 35.35. For this dimension our results suggest that there is now more divergence in the values between the U.S. and Japan. While it could be reasoned that this means Japan has become more feminine, this cannot be determined definitively. The only thing these results do definitively suggest is that Japan is now more feminine than the U.S. Regardless, Hypothesis 3 is not supported.

Uncertainty Avoidance

Japan's values in regards to uncertainty have always been higher than the U.S. In the original sample there was a difference of -43. While it was hypothesized that the U.S. has become more risk- adverse and Japan has become more risk-seeking, the opposite is seen in our results. Our sample showed a difference of -64. For this to occur, one or both of the cultures had to shift in the opposite direction hypothesized. So in essence either Japan has become more risk-adverse (higher uncertainty avoidance), the U.S. has become more risk-seeking (lower uncertainty avoidance), or a combination of both. Result being that Hypothesis 4 is not supported.

Long-Term Orientation

The U.S. was much more short-term oriented in the initial sample. However, the difference has converged from -48 to -13.1. Therefore, the values of one or both countries have shifted in the hypothesized direction. Thus, Hypothesis 5 is supported; the U. S. and Japan have become more similar in regards to values associated with long and short-term orientation.

Indulgence – Restraint

There were no previous results comparing the U.S. and Japan in relation to indulgence and restraint. Therefore it was hypothesized that the U.S. would score higher on this dimension thus demonstrating values of more indulgence and Japan would have a lower score reflecting restraint. Our results show a difference of 24.85 thus Hypothesis 6 is supported.

Monumentalism – Flexhumity

No previous research comparing the U.S. and Japan on the monumentalism – flexhumity dimension could be found either. It was hypothesized that the U.S. would score higher towards the monumentalism side of the dimension and Japan would score lower towards the flexhumity side of the dimension. Our results showed an extreme difference of 113.65, providing support for Hypothesis 7.

DISCUSSION

We hypothesized that the cultures of the U.S. and Japan would have shifted over time becoming more similar. This was based on cultural convergence theory and the belief that cultures that interact will influence the opposite culture to resemble themselves. However, though a trend of convergence was noticed, it was much more extreme than expected. For instance, our results suggest that the relationship of the U.S and Japan in regards to power distance, individualism – collectivism and masculinity – femininity has reversed. Perhaps a shift in power distance can be attributed to the changing values of the U.S. The growing disparities in U.S. incomes, resentment toward executive compensation, and economic downturn have caused U.S. respondents to perceive greater power distance. The individualism dimension values were not only opposite but also more similar. Japan's trend to become more individualistic is not surprising considering the extended economic struggles and decrease in stable employment (Economist, 1994a). As entrepreneurship increases, this trend may continue. Finally, while there is likely a global trend towards femininity, it appears that Japan is making this transition quicker than most.

Strong convergence of values was noticed in the dimension of long-term orientation. This was not surprising given that both societies run on business quarters and are technologically developed. Perhaps these factors cause individuals to focus on the short term as a means of survival in business. In contrast divergence of values was noticed in uncertainty avoidance. Descriptors of cultures with low uncertainty avoidance include low stress, hard-work only when needed, and lenient rules for children (Hofstede, 1997). Perhaps this divergence can be blamed on the U.S. as we observe evidence of these descriptors in our culture to include increased obesity, welfare and lack of obedience from juveniles. Lastly, our results for the final two dimensions supported our hypotheses. The U.S. is more indulgent and monumentalist than Japan.

Ultimately we were able to accomplish our two objectives and our contributions to the field of international management are several. We did collect and analyze data from the U.S. and Japan to update work-related values of these two cultures and continue the advancement of Hofstede-inspired cross-cultural research. Additionally, we provided another theoretical adaptation of convergence theory for cross-cultural research. We also conducted the initial translation of the VSM 08 into Japanese and submitted our translated survey to the Institute for Research on Intercultural Cooperation (IRIC) for utilization and distribution. Our use of the VSM 08 also further validated it as a current assessment tool of cultural values and has provided results for the initial comparison of the values of the U.S. and Japan in regards to the newly added dimensions (Indulgence – Restraint and Monumentalism – Flexhumity).

Limitations

While we believe that this study makes a significant contribution to furthering cross-cultural research, it is not without its limitations. The greatest limitation of this study is the inability to make direct comparisons. The explanations given for a number of our results are speculative at best. While this is a shortfall commonly associated with cross-cultural research it does not dilute the importance and novelty of our results, yet it does prevent the ability to distinguish specific shifts in culture. Next, our sample was drawn from a population of university students. Hofstede's samples were primarily white collared employees within a single global firm. Additionally, while our sample size met the requirements established by Hofstede, a larger sample and more universal sample would enhance validity.

CONCLUSION

Granted our hypotheses were not all supported, and we have probably generated more questions than we have answered, given the importance and dynamic nature of this topic it is a necessary step. With the increase in globalization the subsequent influence of cultures on one another is inevitable. As these cultures evolve and change under this influence it is imperative that we stay abreast of these changes. As noted, we suggest that a number of these cultural changes have already occurred.

REFERENCES

Axelrod, R. (1997). The dissemination of culture: A model with local convergence and global polarization. *Journal of Conflict Resolution*, 41, 203–226.

Barkema, H. G. & Vermeulen, F. (1997). What differences in the cultural backgrounds of partners are detrimental for international joint ventures? *Journal of International Business Studies*, 28, 845–864.

Barnett, A. & Kincaid, D. (1983). A mathematical theory of cultural convergence. In William B. GudyKunst. ed., *Intercultural Communication Theory: Current Perspectives*. (pp. 171-179). Beverly Hills. CA: Sage.

Brislin, R. (1970). Back-translation for cross cultural research. *Journal of Cross Cultural Psychology*, 1, 185–216.

Chinese Culture Connection (a team of 24 researchers). (1987). Chinese values and the search for culture-free dimensions of culture. *Journal of Cross-Cultural Psychology*, 18, 143–164.

Economist. (1994a). Root or branch? Feb 26, 64.

Economist. (1994b). Toyota's silent revolution. Jan 29, 66.

Economist. (2010). Into the unknown: A special report on Japan. Nov. 20, 1–16.

Frey, F. W. (1970). Cross cultural survey research in political science. In R. T. Holt & J. E. Tuner (Eds.), *The Methodology of Comparative Research*, (pp. 173–294). NY: Free Press.

Fontaine, J. R. J., Duriez, B., Luyten, P., Corveleyn, J. & Hutsebaut, D. (2005). Consequences of a multi–dimensional approach to religion for the relationship between religiosity and value priorities. *International Journal for the Psychology of Religion*, 15, 123–143.

Harris, T. (2010). Japanese lose faith in DPJ leadership. *The Australian*, April 18.

Hayashi, F. (1986). Why is Japan's saving rate so apparently high? *NBER Macroeconomics Annual*, 1, 147–210.

Heine, S. J. (2003). An exploration of cultural variation in self-enhancing and self-improving motivations. In: V. Murphy-Berman and J.J. Berman, eds. *Cross-Cultural Differences in Perspectives of the Self*: (pp. 101–128). Nebraska symposium on motivation, vol. 49. Lincoln, NE: University of Nebraska Press.

Hofstede, G. (1984). The cultural relativity of the quality of life concept. *Academy of Management Review*, 9, 389–398.

Hofstede, G. (2001). *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations Across Nations* (2nd ed). Thousand Oaks, CA: Sage Publications.

Hofstede, G. & Bond, M. H. (1988). The Confucius connection: From cultural roots to economic growth. *Organizational Dynamics*, 16, 4–21.

Hofstede, G., Hofstede, G. J., Minkov, M., & Vinken, H. (2008). *Values Survey Module 2008* Manual. Geert Hofstede BV. Retrieved from http://stuwww.uvt.nl/%7Ecsmeets/ManualVSM08.doc

Hofstede, G., & Minkov, M. (2010). Long- versus short-term orientation: New perspectives. *Asia Pacific Business Review*. 16, 493–504.

Hofstede, G., Neuijen, B., Ohayv, D., & Sanders, G. (1990). Measuring organizational cultures: A qualitative and Quantitative study across twenty cases. *Administrative Science Quarterly*, 35, 286–316.

House, R., Javidan, M., Hanges, P. & Dorfman, P. (2002). Understanding cultures and implicit leadership theories across the globe: An introduction to project GLOBE. *Journal of World Business*, 37, 3–10.

Kincaid, D., Yum, J., Woelfel, J., & Barnett, G. (1983). The cultural convergence of Korean immigrants in Hawaii: An empirical test of a mathematical theory. *Quality and Quantity*, 18, 59–78.

Kluckhohn, C. (1962). *Culture and Behavior*. New York: The Free Press of Glencoe

Minkov, M. (2007). *What makes us different and similar: a new interpretation of the World Values Survey and other cross-cultural data?* Sofia: Klasika i Stil.

Prigogine, I. & Nicolis, G. (1977) *Self-Organization in Non-Equilibrium Systems*. New York: Wiley.

Sachs, M. (1973). *The Field Concept in Contemporary Science*. Springfield, IL: Thomas.

Schlender, B. R. (1994). Japan's white collar blues. *Fortune*, 129, 97

Taras, V., Kirkman, B., & Steel, P. (2010). Examining the impact of culture's consequences: A three-decade, multilevel, meta-analytic review of Hofstede's cultural value dimensions. *Journal of Applied Psychology*, 95, 405–439.

Telegram & Gazette. (2010). What's next: Boomers face changed landscape. Dec 29, A7.

Townsend, A. M., DeMarie, S. M. & Hendrickson, A. R. (1998). Virtual teams: Technology and the workplace of the future. *Academy of Management Perspectives*, 12(3), 17–29.

Wei-hsin, Y. (2005). Changes in women's postmarital employment in Japan and Taiwan. *Demography*, 42, 693–717.

World Economic and Social Survey. (2007). New York, NY: United Nations.

Wu, M. (2006). Hofstede's cultural dimensions 30 years later: A study of Taiwan and the United States. *Intercultural Communication Studies*, 15, 33–42.

An Empirical Study of Emotional Response to Sounds in Advertising

Carmen Lewis
Troy University

Cherie Fretwell
Troy University

Jim Ryan
Troy University

The goal of this paper is to better understand how individuals emotionally respond to common advertisement sounds. We attempt to model the antecedents to the emotional response variable by developing a set of hypotheses predicting emotional reaction and empirically test the hypotheses using data from 153 laboratory participants. During the survey, participants were asked to listen to 20 different sounds on a computer and subsequently answer questions regarding their emotional response toward each one. Results indicate the emotional response to a sound clip is predicted by the level of interest generated and how well the sound captured the participant's attention.

INTRODUCTION

As one of the highest rated commercials during Superbowl 2011, the Volkswagon Passat ad utilized several sounds to elicit emotional response, including the Darth Vader theme, a dog barking, and a car cranking. Comparable to the typical television commercial, this one includes a child in a home with his parents. Yet, this kid, dressed as Darth Vader, attempts to use "The Force" unsuccessfully on several items. Unknowingly, he believes he has started the engine of the family car by using "The Force", while dad, holding the keyless remote starter from the kitchen, winks at mom. Music and sounds are often used in radio and television advertising to trigger moods and communicate nonverbally (Bruner, 1990). For instance, viewers of the Passat ad feel immediate excitement for the surprised child. This type of emotion in marketing is not a novel concept. The most successful marketing campaigns use elements of emotional marketing to appeal to consumers. Ads depicting babies and puppies tend to work for this reason (Robinette, Brand, & Lenz, 2001). Robinette et al. further suggest emotion to be the "one-and-only" true basis of successful marketing.

For the purposes of this paper, emotion is defined as a condition of the mind that arises from cognitive assessments of events or thoughts; comes with physiological experiences; is often associated with actions, such as gestures and facial movements; and may result in actions to manage the emotions (Bagozzi, Gopinath, & Nyer, 1999). To better understand purchase behavior, researchers must recognize that buying emotionally engages people. Specifically, consumers must often choose among several similar products (we include both goods and services in our use of product). In doing so, they weigh choice criteria against product options (O' Shaughnessy & O' Shaughnessy, 2003). One criterion that is widely used in purchase behavior is intrinsic liking. This includes how the product looks, feels, tastes, smells, and sounds. Making purchase decisions on the basis of liking implies that the product creates feelings of pleasure and enjoyment in the buyer (O' Shaughnessy & O' Shaughnessy, 2003).

Companies spend billions of dollars each year developing marketing strategies and advertisement campaigns to influence consumer behavior. Despite the large amount of money spent, much of it is wasted on unsuccessful marketing ploys that fail to successfully sell goods and services. Researchers have found that consumers have multiple emotional responses to marketing stimuli. For example, a consumer may see steak on a television commercial and consciously acknowledge that the steak *looks* delicious. If the sound of steak sizzling is added to the same commercial, the consumer may begin to crave or hunger for steak. This type of emotional response triggers activity in the human brain, which is composed of a network of neuron cell clusters. As a result, the neurons in the brain use more energy when stimulation occurs while the consumer is being exposed to an advertisement (Lovell, 2008).

While much is known regarding the effectiveness of sounds in advertisements, a vast amount of information is yet to be discovered thanks to newer outlets such as the Internet and smart phones. Visual persuasion such as television and online commercials, billboards, and magazine ads is the most prevalent form of advertising used by companies today. However, studies show that consumers are not only influenced by what they *see*, but what they *hear* as well. Historically, jingles and catchy slogans have been the primary marketing tools used to appeal to the ear. Little research has been conducted on the relationship between mental imagery generated by non-visual sensory cues and its influence on consumer behavior (Miller & Marks, 1992). Therefore, this study proposes a framework for better understanding the role of emotions in marketing. Specifically, the following research questions are posited: What influences emotional response to sounds in advertising? And, what specific sounds in advertising create the most emotion in consumers?

The rest of this paper is outlined as follows: First, the literature review of emotions in advertising is outlined, followed by the development of a set of hypotheses, predicting the conditions under which emotions are likely to emerge. A research strategy and construct measures to test the hypotheses are also presented, and the paper concludes with expected contributions, limitations, and opportunities for future research in these areas.

LITERATURE REVIEW

In this section of the paper, we review the literature relating to emotional response to sounds in advertising.

It has been noted that marketing researchers tend to divide as supporters of one of two philosophical stances: Descartes (1596-1650) – who used emotionless, mathematical explanations to account for physical phenomena, or Pascal (1623-1662) (1909)(1909)(1909)- "The heart has reasons that reason does not know" (O' Shaughnessy & O' Shaughnessy, 2003). While traditional marketing research portrays buyers as rational decision-makers primarily concerned with function and benefit, an alternate perspective views individuals as both rational and emotional buyers, whose concerns are not only function and benefit but also achieving pleasurable experiences. Schmitt (1999) coined the latter view as Experiential Marketing, distinguishing five types of experiences: sensory experiences, affective experiences, creative cognitive experiences, physical experiences (behaviors and lifestyles), and social-identity experiences. Siding with Pascal, the focus of this manuscript is on sensory and affective experiences associated with sound.

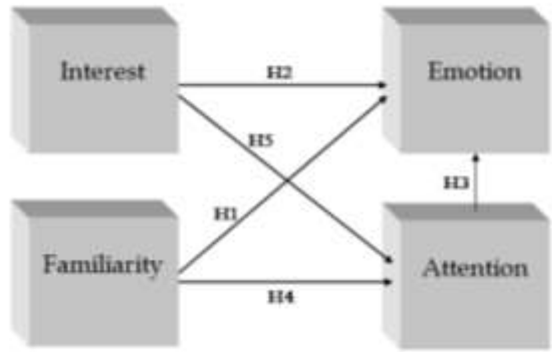
"Perception is a continual series of simple hypotheses about the external world which are built up and selected by sensory experiences (Gregory, 1970)." In the context of marketing, how buyers perceive products is created, in part, by the sounds affiliated with them. According to Martin Lindstrom, a marketing mogul and consultant, 83% of advertising focuses only on visual stimulation. This leaves a wide-open area of undiscovered marketing opportunity. Lindstrom (2010) feels that the human sense of hearing is just as powerful a tool as that of sight. He further suggests that consumers have a direct emotional response to common sounds heard in the environment. Therefore, in its current state, advertisers are underutilizing the sensory emotions associated with sounds; however, in order to utilize them to their fullest potential, it would be advantageous to marketers to discover which sounds are most appealing to the human ear.

Despite some overlap, research on the influence of sounds in advertising is comprised of two separate literature streams: cognitive and affective response. Advertising affects the "thinking" (cognitive) dimension and the "feeling" (affective) dimension of a buyer (Vakratsas & Ambler, 1999). Such areas of literature typically measure purchase intent, brand attitude, recall facilitation, or affective response as the dependent variable. Our knowledge of affective response as an outcome in advertising with sounds is somewhat limited. For instance, more empirical studies have examined brand attitude as the dependent variable (Anand & Sternthal, 1990; Blair & Shimp, 1992; Bozman, Mueling, & Pettit-O'Malley, 1994; Hung, 2000, 2001; Maclnnis & Park, 1991; Mitchell, 1988; Park & Young, 1986; Simpkins & Smith, 1974) than affective response. Such studies involving affective response found more congruous timbre to be associated with happier, calmer, and more relaxed responses (Oakes & North, 2006). Similarly, North et al. (2004) found music specifically composed for radio advertisements to be associated with enhanced affective response.

HYPOTHESES

The research model, see Figure 1, integrates interest levels and familiarity with the sounds to show their effect on level of affective response (modeled as emotion) and attention. Specifically, emotion refers to the level of feelings evoked when hearing certain sounds, whereas attention is defined as the ability of the sound to capture the listener's attention. The following paragraphs present hypotheses to be empirically tested.

FIGURE 1
MEASUREMENT MODEL



In many life situations, experiences and familiarity with things affect how one responds. For instance, Mano (1996) had subjects rate commercials on various dimensions. He found ad familiarity to be associated with more pleasantness and less boredom. Likewise, for the first hypothesis, we posit a relationship between one's familiarity with the sound categories and an individual's emotional response to the sound. Specifically, more familiarity should be associated with higher levels of emotional response. Thus,

> *Hypothesis 1: Familiarity with a sound will increase the level of emotion felt toward that particular sound.*

The second hypothesis suggests a relationship between interest level and emotional response. Interest level is defined as the extent to which a person's attention is engaged by something. It is suggested that when an individual finds a particular sound interesting, he or she will have a greater level of emotional response to the sound. Thus,

> *Hypothesis 2: Interest in a sound will increase the level of emotion felt toward that particular sound.*

Studies have shown that the inclusion of sounds in advertisements positively impacts the brand and commercial message by increasing memory, affect, and attention (Scott, 1990; Wallace, 1991). The extent to which a person focuses on a sound is how attention is defined for this paper. Hypothesis 3 associates the amount of attention initiated by a sound with the level of emotional response. In essence, higher levels of attention should be accompanied by more emotions. Thus,

> *Hypothesis 3: Attention will increase the level of emotion felt toward a particular sound.*

Hypotheses 1, 2, and 3 suggest relationships with the dependent variable of emotion. The second dependent variable in the study is the extent to which a sound captures a subject's attention. Hypotheses 4 and 5 will produce relationships with this alternative dependent variable. Specifically, higher levels of familiarity and interest with certain sounds should evoke higher attention levels. Therefore, *Hypothesis 4: Familiarity with a sound will increase the level of attention felt toward that particular sound.*

Hypothesis 5: Interest in a sound will increase the level of attention felt toward that particular sound.

PROCEDURES

Voluntary participants were recruited from the student population at a southeastern university. The target population consisted of males and females at least 19 years of age enrolled in upper-level undergraduate and graduate business classes. Individuals younger than 19 years old were excluded from the study to comply with consent agreement requirements. The research design involved a laboratory-based survey. A total of 153 students participated in the survey. The survey was used to determine emotional reactions associated with various sounds. Twenty sound clips were prepared in advance through discussion with four colleagues of the authors, including one professor and three graduate students. They were chosen based on common sound clips heard in on-line advertisements. Based on an initial pilot study of 15 subjects, 20 sound clips proved to be adequate in keeping the survey to less than 30 minutes. This time frame was sought to reduce subject fatigue. See Appendix A for a list of the sound clips used in the study.

Procedures involved participants listening to 20 sound clips and assessing each based on 20 different emotions. The list of emotions was created based on the Geneva Emotion Wheel (Baenziger, Tran, & Scherer, 2005); however, the list was modified to eliminate certain less recognizable terms, therefore, simplifying the process to facilitate understanding. Each participant used headphones while listening to a sound clip via a lab computer and rated the intensity of each emotion for the sound as either (1) not felt, (2) low, (3) moderate, or (4) high. Once each emotion was rated, the next sound clip played. This continued until all 20 sound clips had been heard. Emotion was calculated by taking the sum of the higher two emotional levels. Thus, a selection of moderate or high was used to assess emotion.

A computer-based questionnaire was also used to assess the variables familiarity, interest, and attention levels. The participant's familiarity with the sound was measured to determine their prior experience with or exposure to the sound. Participants were asked if they were familiar with the sound. If the response was *yes*, the subsequent question was to identify the sound in order to validate their understanding of it. To measure interest and attention, participants were asked to rate both items on a 7-point Likert scale. Ratings ranging from *strongly disagree* to *strongly agree* were used when asked if they agreed with the statements, "The sound was interesting … The sound captured my attention."

The questionnaire used in the study is shown in Appendix B. The hypotheses were tested with SPSS using linear regression analysis. The following section conveys their results.

RESULTS

The demographic variables of gender, age, education level, and marital status were captured in this study to provide background information on the study's participants. Results show that 74% of the participants are female, while the average age is 35 years old. Regarding education level and marital status, approximately 44% of the participants have completed their associate's degree and 49% are married. Because this study relates to marketing, two more questions were asked to assess the participants' marketing experience. Findings indicate that only 3% of the study's subjects work or study in the marketing field, but 85% have taken marketing classes.

The correlation matrix displays the highest correlation between any two independent variables as .32, indicating there are no obvious problems with multicollinearity. Emotion was significantly correlated with familiarity ($r = .47$, $p < .05$), interest ($r = .85$ $p < .01$), and attention ($r = .84$, $p < .01$). Attention was also significantly correlated with familiarity ($r = .48$, $p < .05$), and interest ($r = .68$, $p < .01$). Descriptive statistics for the study are provided in Table 1.

TABLE 1
DESCRIPTIVE STATISTICS: MEANS, STANDARD DEVIATIONS, AND CORRELATIONS[a]

	Variables	Means	s.d.	1	2	3
1.	*Familiarity*	86.7	8.6			
2.	*Interest*	3.61	.69	.32		
3.	*Attention*	4.45	.79	.48*	.68**	
4.	*Emotion*	190	86	.47*	.85**	.84**

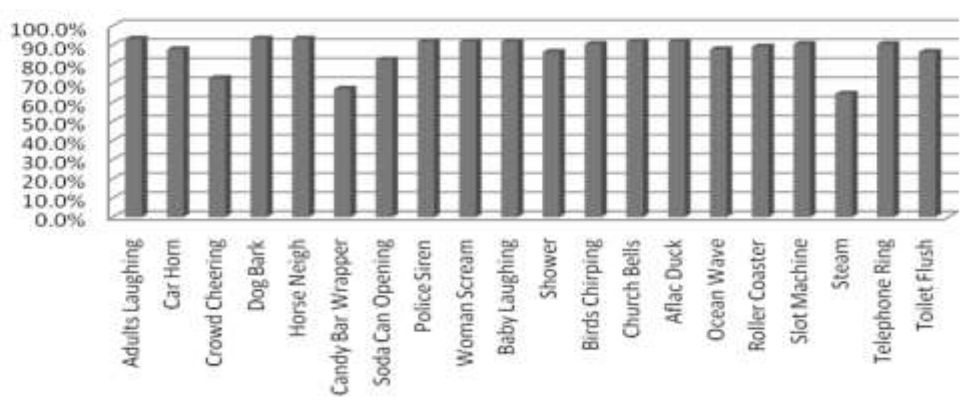
[a] N = 153.
* p < .05, two-tailed test.
** p < .01, two-tailed test.

There are numerous ways to create a single sound. For instance, to create the sound "adults laughing" one can use two males, two females, or a crowd of both genders. However, the researchers chose sounds that they felt best represented each category. Therefore, familiarity was assessed based on the chosen 20 sound clips. Figure 2 shows that over 90% of the participants are familiar with the sounds of adults laughing, a dog barking, and a horse neighing; however, only 64% are familiar with the sound of steam and 67% recognized the opening of a candy bar wrapper.

The average level of interest for each sound clip was also assessed. The results indicate that of the 20 sounds, a baby's laugh, ocean waves, slot machines jingling, and adults laughing are found to be the most interesting to participants. Rounding out the bottom of the list of most interesting sounds are the toilet flushing, a car horn blowing, and a telephone ringing.

It is interesting to note that although a car horn blowing is among the least interesting, it was near the top of the attention list. Other top attention getters include the laughter of a baby and adults, a police siren, and a screaming woman. Hearing a toilet flush and opening a candy bar wrapper are among the least interesting to the study participants.

FIGURE 2
PARTICIPANTS' FAMILIARITY WITH THE 20 SOUNDS



The variable with the most variance is emotion. The sound that evoked the most emotional response is the laughter of a baby. This is not surprising due to the widespread use of baby sounds in advertising, which commonly induces positive emotions in individuals. In contrast, fewest emotional responses were associated with the opening of a candy bar wrapper.

Hypotheses 1-5 were tested using linear regression. Hypothesis 1 suggested that familiarity with a sound will increase the level of emotion felt toward that particular sound. However, this hypothesis was not supported. Hypothesis 2 suggested that as a sound produced more interest, the level of emotion felt toward that particular sound would also increase. This hypothesis was supported ($\beta = .51$, $p < .001$). It was also found, as suggested in Hypothesis 3, that a sound capturing the attention of its listener is associated with more emotional response to that sound ($\beta = .45$, $p < .01$). Hypotheses 4 and 5 suggested relationships with attention as the dependent variable. Specifically, Hypothesis 4 suggested an increase in familiarity to be associated with an increase in attention, and Hypothesis 5 suggested an increase in interest to be associated with an increase in attention; however, neither of these hypotheses was supported. Together, 86.9% of the variance in emotional response was explained by attention and interest levels evoked by the sounds. See Table 2 for the regression results.

TABLE 2
REGRESSION TABLE RESULTS

	Model 1 **Emotional Response**		**Model 2** **Attention Level**	
Familiarity	$\beta = -.017$	S.E. = 212.34	$\beta = .354$	S.E. = 1.67
Interest level	$\beta = .571^{**}$	S.E. = 29.04	$\beta = .495^{*}$	S.E. = .211
Attention level	$\beta = .463^{**}$	S.E. = 28.03		

R^2 = 86.9%: Model 1, 53%: Model 2
N = 153 participants
* p<.05
**p<.01

DISCUSSION

In this study, a model of antecedents to the emotional response of sounds was presented to investigate specific hypotheses, while generating new insight into the realm of emotional responses to sounds in advertising. Although the researchers do not attempt to directly measure the final outcome – whether or not certain sounds actually generate a purchase, it is suggested that specific emotions generated from marketing ploys may influence the purchase of a product or service. This study seeks to extend the work of researchers such as Lindstrom to further understand the effects of sounds in advertising.

As expected, it was found that the more an individual finds a sound interesting and it captures the listener's attention, the more emotional response will be produced. Surprisingly, more familiar sounds did not create more emotional response. One potential explanation is that given the low amounts of variance associated with the familiarity variable, there was not enough to allow for a significant relationship. In fact, at least 80% of the participants were familiar with 17 of the 20 sounds, which is expected because every day, common sounds were used in the study.

Although not specifically hypothesized, there are many interesting results to be found when analyzing the specific emotions associated with each sound. For instance, adults laughing generated the emotions of surprise, interest, happiness, and amusement, whereas, a crowd cheering created a sense of pleasure, happiness, amusement, and interest.

CONTRIBUTIONS AND IMPLICATIONS

The objective of this study was to illustrate how emotional responses to commonly used sounds in advertising could be captured and thus better understood. We found that emotional response was driven primarily by the amount of interest and level of attention evoked by specific sounds. Surprisingly, we did not find familiarity of the sound to play an important role in facilitating emotion. We believe that further study in these areas is needed to better clarify the relationships among these variables and to explore new variables that may ultimately influence purchasing decisions.

Several new research questions and directions for future research should be explored to create a better understanding of the use of sounds in advertising. For instance, sounds may elicit emotional memories of a product (e.g., the sound of opening a can of cola) predisposing consumers to recall reminiscences of using the advertised brand (O' Shaughnessy & O' Shaughnessy, 2003). Therefore, an extension of this research would be to model consumer recall ability as an antecedent to emotional response.

Although outside the boundaries of the current study, an interesting addition to a future study in this area would be to attempt to separate positive and negative emotional responses. For instance, if a subject responded that adults laughing created an intense feeling of jealousy, would that create a negative association with the product, or would the intense feeling simply make the product more memorable? This type of study might provide interesting new findings, particularly in the area of emotional responses.

While good results were obtained from the study, it is not without limitations. Some would suggest that emotional responses in a lab setting may not equate to actual purchase decisions because of the differences in the environments. That is, a lab setting may produce stimuli different from listening to an advertisement in the comfort of one's home or on a car radio. However, a laboratory provides researchers the opportunity to control their environment. Outside noise interference is prohibited, thus allowing participants to focus on a single sound. This method allows the researchers to protect against threats to internal validity. Therefore, more care is taken in the degree to which a study is assessing the concept the researcher is attempting to measure. A further limitation revolves around the ethical questions that arise from this topic. For instance, if we could isolate the sounds that resonate with audiences to promote purchase decisions, is that ethical? This is a debate that stirs many questions. Also, some researchers would suggest that traditional marketing research is flawed due to natural human error. Consumers in general have preconceived notions about products and are not always honest in rating them. Others may not know how to relay their thoughts or feelings towards a particular product during testing (Randall, 2009). In an attempt to combat these shortcomings, a revolutionary technique is being used – neuromarketing. It removes this margin of error by directly measuring brain activity. The neuromarketing procedure uses science and psychology to study consumer responses to marketing stimuli in order to measure consumer preference in products.

Testing for neuromarketing research may include the following: functional magnetic resonance imaging (fMRI), electroencephalography (EEG), galvanic skin responses, heart rate acceleration, and eye tracking. An fMRI machine measures the changes of blood flow and oxygenation in the brain in response to advertisement stimuli. Electroencephalography (EEG) is a process by which electrodes are placed on the human scalp to measure brain electrical activity. Galvanic skin responses are measured by recording the electrical currents that pass through the skin in response to emotion. Heart rate acceleration tracking and eye tracking activity may also monitor consumer response to exposed marketing stimuli.

Although neuromarketing appears to be the most accurate form of interpreting consumer preference and buying behavior, there are skeptics and critics of its use. Critics feel that the techniques are invasive and that ultimately marketers will use the information to stimulate a false desire in consumers. These critics feel that humans are not viewed as potential consumers, but rather as test subjects (Tsai, 2010). Another concern is that addictions or cravings for products may develop unnecessarily (Randall, 2009). Critics and supporters also debate the validity of testing in a lab versus the actual response of a consumer when faced with a purchase decision. Would the same results occur? Overall, most critics feel that neuromarketing is a nice word for subliminal advertising and will be used to brainwash consumers into buying products.

CONCLUSION

Although this study significantly varies from neuromarketing science, overall, it contributes to a better understanding of how individuals emotionally respond to common sounds in advertisements. Our findings indicate that the emotional response to a sound clip is predicted by the level of interest generated by the sound and how well the sound captured the participant's attention. The method used to model the antecedents to emotional responses likely generalizes across other sound clips and provides a useful lens for examining such effects. Hence, future research is encouraged to provide further insights regarding the reliance on sound in advertisements to facilitate purchase decisions.

REFERENCES

Anand, P., & Sternthal, B. (1990). Ease of message processing as a moderator of repetition effects in advertising. *Journal of Marketing Research*, 27, (3), 345-353.

Baenziger, T., Tran, V., & Scherer, K. R. (2005). The emotional wheel. A tool for the verbal report of emotional reactions *Poster presented at the conference of the International Society of Research on Emotion*, Bari, Italy.

Bagozzi, R. P., Gopinath, M., & Nyer, P. U. (1999). The role of emotions in marketing. *Journal of the Academy of Marketing Science*, 27, (2), 184-206.

Blair, M. E., & Shimp, T. A. (1992). Consequences of an unpleasant experience with music: A second-order negative conditioning perspective. *Journal of Advertising*, 21, (1), 35-43.

Bozman, C. S., Mueling, D. D., & Pettit-O'Malley, K. L. (1994). The directional influence of music backgrounds in television advertising. *Jounal of Applied Business Research*, 10, (1), 14-18.

Bruner, G. C. I. (1990). Music, mood, and marketing. *The Journal of Marketing*, 54, (4), 94-104.

Descartes, R. (1647). *Meditations on First Philosophy*.

Gregory, R. L. (1970). *The Intelligent Eye*, New York, NY: McGraw-Hill.

Hung, K. (2000). Narrative music in congruent and incongruent tv advertising. *Journal of Advertising*, 29, (1), 25-34.

Hung, K. (2001). Framing meaning perceptions with music: The case of teaser ads. *Journal of Advertising*, 30, (3), 39-49.

Lindstrom, M. (2010). *Buyology: Truth and Lies about Why we Buy*: Random House, Inc.

Lovell, C. (2008). Is neuroscience making a difference? *All Business*, from http://www.allbusiness.com/marketing-advertising/market-research-analysis-market/13774905-1.html

Maclnnis, D. J., & Park, C. W. (1991). The differential role of characteristics of music on high- and low-involvement consumers' processing of ads. *Journal of Consumer Research*, 18, (2), 161-173.

Mano, H. (1996). Assessing emotional reactions to tv ads: A replication and extension with a brief adjective checklist. *Advances in Consumer Research*, 23, 63-69.

Miller, D. W., & Marks, L. J. (1992). Mental imagery and sound effects in radio commercials. *Journal of Advertising,* 21, (4), 83-93.

Mitchell, A. A. (Ed.). (1988). *Current Perspectives and Issues Concerning the Explanation of Feeling in Advertising Effects*. Lexington, MA: Lexington Books.

North, A. C., Hargreaves, D. J., Mackenzie, L. C., & Law, R. M. (2004). The effects of musical and voice 'fit' on responses to advertisements. *Journal of Applied Social Psychology,* 34, (8), 1675-1708.

O' Shaughnessy, J., & O' Shaughnessy, N. J. (2003). *The Marketing Power of Emotion*, New York, NY: Oxford University Press.

Oakes, S., & North, A. C. (2006). The impact of background music tempo and timbre congruity upon ad content recall and affective response. *Applied Cognitive Psychology,* 20, (4), 505-520.

Park, C. W., & Young, S. (1986). Consumer response to television commercials: The impact of involvement and background music on brand attitude formation. *Journal of Marketing Research,* 23, (1), 11-24.

Pascal, B. (1909). *The Necessity of the Wager*, New York: P.F. Collier & Son.

Randall, K. (2009). Neuromarketing hope and hype: 5 Brands conducting brain research. *Fast Company*.

Robinette, S., Brand, C., & Lenz, V. (2001). *Emotion Marketing: The Hallmark Way of Winning Customers for Life*, New York, NY: McGraw-Hill.

Schmitt, B. (1999). Experiential marketing. *Journal of Marketing Management,* 15, (1-3), 53-67.

Scott, L. M. (1990). Understanding jingles and needledrop: A rhetorical approach to music in advertising. *Journal of Consumer Research*, 17, (2), 223-236.

Simpkins, J. D., & Smith, J. A. (1974). Effects of music on source evaluations. *Journal of Broadcasting*, 18, (3), 361-367.

Tsai, J. (2010). Are you smarter than a neuromarketer. *Customer Relationship Management,* 14, 19-20.

Vakratsas, D., & Ambler, T. (1999). How advertising works: What do we really know? *Journal of Marketing* 63, (1), 26-43.

Wallace (Ed.). (1991). *Jingles in Advertisements: Can they Improve Recall* (Vol. 18), Provo, UT: Association for Consumer Research.

APPENDIX A

SOUND CLIPS USED IN THE SURVEY

1. Adults Laughing
2. Car Horn
3. Crowd Cheering
4. Dog Bark
5. Horse Neigh
6. Candy Bar Wrapper
7. Soda Can Opening
8. Police Siren
9. Woman Scream
10. Baby Laughing
11. Shower
12. Birds Chirping
13. Church Bells
14. Aflac Duck
15. Ocean Wave
16. Roller Coaster
17. Slot Machine
18. Steam
19. Telephone Ring
20. Toilet Flush

APPENDIX B

QUESTIONNAIRE ITEMS

1. Identify the emotion(s) that match closest to the way you felt after listening to the sound. Then determine the intensity of the emotion(s) you experienced by selecting one of the categories for each row. You may choose more than one emotion for each sound.

	No emotion felt	Low	Moderate	High
Longing	O	o	o	o
Anger	O	o	o	o
Contempt	O	o	o	o
Surprise	O	o	o	o
Disgust	O	o	o	o
Relief	O	o	o	o

Jealousy	O	o	o	o
Feeling Awe	O	o	o	o
Disappointment	O	o	o	o
Feeling Love	O	o	o	o
Guilt	O	o	o	o
Pleasure	O	o	o	o
Embarrassment	O	o	o	o
Happiness	O	o	o	o
Fear	O	o	o	o
Pride	O	o	o	o
Sadness	O	o	o	o
Amusement	O	o	o	o
Compassion	O	o	o	o
Interest	O	o	o	o

2. Are you familiar with the sound? Yes or no. If you answered yes, specify the sound.

3. Which of the following categories best represent how you feel about the sound? The sound was interesting:
   Strongly disagree 1 2 3 4 5 6 7 Strongly agree

4. The sound captured your attention?
   Strongly disagree 1 2 3 4 5 6 7 Strongly agree

5. What is your gender? Male or Female

6. What is your date of birth? ________

7. What is your highest level of education completed?
   - Some High School
   - High School Diploma
   - GED
   - Some College
   - Associates Degree
   - Bachelors Degree
   - Graduate Degree
   - Post Graduate Degree

8. What is your marital status?
    - Married
    - Divorced
    - Separated
    - Widowed
    - Single
    - Living With Partner

9. Do you work or study in the marketing field? Yes or no. If yes, explain. _______

10. Have you taken Marketing classes at a College or other institution? Yes or no

11. Name as many of the sounds as you can recall from what you previously heard.

Price Dispersion in the Airline Industry: A Conceptual Framework and Empirical Analysis

Edward D. Gailey
Fairmont State University

Ashutosh Dixit
Cleveland State University

Thomas W. Whipple
Cleveland State University

Rajshekhar 'Raj' Javalgi
Cleveland State University

Many businesses compete in multiple markets which can cause businesses to temper their price adjustments, affecting price dispersion. The authors propose a framework based on major characteristics of competition and market structure which influence price dispersion. The focus of this study is the U.S. airline industry analyzing data from 5,974 city pair routes. The results of this empirical analysis show that multi-market contact and the interaction of market concentration with multi-market contact have considerable effects on price dispersion. An understanding of these effects provides valuable insights for developing pricing strategies and extending the stream of research on price dispersion.

INTRODUCTION

Businesses focus setting prices and adjusting prices to influence demand and profitability. In many service markets, such as airline tickets, hotel rooms, and entertainment venues, diverse prices are frequently offered by different businesses to cater to various market segments having particular sets of wants and needs. This variation in prices (i.e., price dispersion) is not only based on customer heterogeneity, but also on competition and market related characteristics. The effect of some important aspects of competition and market structure has been largely overlooked in extant research on price dispersion. Understanding the presence or absence of exploitable imperfections in markets and the implications for developing pricing strategies are critical for the long-term viability of businesses that must compete in environments with increasingly informed customers (Clemons, Hann, & Hitt, 2002).

A pricing strategy is a rational selection from a range of possible prices targeted for meeting a firm's objectives planned to respond to a specific situation (Tellis, 1986). Effective pricing strategy is based on a thorough understanding of the target market including the nature and complexity of; products, consumers, competitors, and market structures (see Monroe, 2003; Nagle & Holden, 2002). Recent advances in information technology, such as digital products, real time computational abilities, intelligent agent technologies, and database marketing, open a vast array of pricing strategy possibilities (Dixit, Whipple, Zinkham, & Gailey, 2008).

This research seeks to provide understanding of how competitive forces and market characteristics influence price dispersion. Price dispersion impacts consumers' perceptions of value and purchase behavior which in turn affects sales revenue and profitability of firms and industries. Specifically, we focus on the following research questions in this study: 1. How does multi-market contact, the degree to which rival firms compete in different markets, affect price dispersion? 2. How does market concentration affect the relationship between multi-market contact and price dispersion? If the forces affecting price dispersion are better understood, managers may be able to develop enhanced business strategies and plans, leading to higher performance.

Price dispersion is the variation in prices of homogeneous products sold by competing firms (Stigler, 1961; Borenstein & Rose, 1994; Zhao, 2006). Stigler's (1961) seminal article discusses the effect of the differences in customer search costs on price dispersion. Stigler states that price dispersion is ubiquitous even for homogeneous products. Stigler's conclusion is that price dispersion is caused by consumers' lack of information due to search costs and variation in 'terms of sale'.

Prior research findings indicate that markets for many homogeneous products are characterized by considerable price dispersion (e.g., Stigler, 1961; Pan, Ratchford, & Shankar, 2004). Emerging streams of research suggest that specific types of market imperfections (e.g., Lindsey-Mullikin & Grewal, 2006; Grewal & Marmorstein, 1994), customer learning (e.g., Johnson, Moe, Fader, Bellman, & Lohse, 2000), and brand loyalty (e.g., Chen & Hitt, 2001) influence price dispersion. These scholars mainly focus on consumer related influences on price dispersion. The effects of multi-market contact, an important influence on competitive pressure and price dispersion, have not been studied.

Our study contributes to price dispersion research in several important ways. First, it provides a much needed conceptual framework of price dispersion in a complex, service market (i.e., airline ticket). Second, it empirically examines the influence of previously unexplored competition related variables, such as multi-market contact, and the interaction of market concentration on the effect that multi-market contact has on price dispersion. Third, it contributes managerial insight to decision makers in retail service industries.

RELATED LITERATURE

Scholars in marketing have investigated the effects of price dispersion on key marketing variables as well as the causes of price dispersion. A review of literature resulted in two major streams of research; (1) consumer heterogeneity (including search cost, customer learning, and brand loyalty) and (2) market structure and competition. A study by Anacarani and Shankar (2004) evaluates the influence of the Internet on price dispersion of books and music CDs across Internet-only retailers, traditional retailers, and multi-channel retailers. Their results show that multi-channel retailers have the most price dispersion, traditional retailers the second highest price dispersion, and Internet-only retailers the least price dispersion. These findings indicate that the online markets offer opportunities for retailers to differentiate prices within and across the retailer types, similar to traditional markets.

Biswas, Dutta, and Pullig (2006) studied the moderating role of perceived price dispersion on low price guarantees. Price dispersion is evaluated as a signal for lowest price in a retail environment using mock ads for a branded DVD player. The results show that price guarantee effects are attenuated when consumers perceive price dispersion to be high for a given product. The results also indicate that a low price guarantee with progressively higher levels of penalty leads incrementally to more favorable effects on key consumer outcomes when perceived price dispersion is high. The effect of increasing the penalty level had no such incremental benefit on consumer outcomes in the situation of low perceived price dispersion.

Zhao (2006) evaluated price dispersion in the grocery market and checked for the consistency of evidence of price dispersion with theories related to consumer heterogeneity, consumer search, and competition. Zhao applies these three influencers of price dispersion to evaluate price dispersion in three situations; (1) for a specific brand across stores, (2) within a product category in a store across brands, and (3) over time for a specific brand. Zhao's research shows price dispersion to positively correlate with consumer heterogeneity, consumer search, and competition, which is consistent with the theories related to price dispersion.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

According to the 'law of one price' supply and demand determine a single price for a homogenous product, regardless of the number of sellers and buyers. In reality, it is well known by marketing scholars and economists that 'one price' rarely, if ever, occurs in real markets. Homogeneous products are often sold at widely differing prices by competing firms, even in markets that are highly competitive, such as the U.S. airline ticket market. This study examines key competitive and market factors that may influence price dispersion, and evaluates the consistency with theories. Specifically, it examines multi-market contact and the interaction with market concentration as influencers of price dispersion.

We present a conceptual framework in FIGURE 1 (See Appendix). As shown in the diagram, price dispersion is influenced by two groups of independent variables; one group of competition related characteristics and another group of local market related characteristics. This conceptual framework indicates the expected relationships between the independent variables and the dependent variable, price dispersion. In the following section we discuss each construct and derive hypotheses.

Multi-Market Contact

Prior literature has typically studied price dispersion in single markets, and has not examined the relationship between multi-market contact and price dispersion. Multi-market contact is defined as the level of competitive contact, which firms in an industry have in multiple markets (Bernheim & Whinston, 1990; Karnani & Wernerfelt, 1985; Evans & Kessides, 1994; Baum & Korn, 1996). For any pair of rivals in a market, multi-market contact represents the number of other markets in which the same pair of firms met as competitors. Thus, multi-market contact between two competing firms in a given market reflects the degree of market overlap between those firms in the other markets.

The theory of multi-market competition (Jayachandran, Gimeno, & Varadarajan, 1999) implies that multi-market contact between two rival firms will reduce the intensity of rivalry between them in each market where they compete (Bernheim & Whinston, 1990). Even though multi-market contact indicates that firms are competitors across sub-markets, the theory suggests that the intensity of rivalry in each of the mutually contested markets will be low. The reason for such an effect, according to the theory, is that firms with high multi-market contact have an extended scope for retaliation to actions taken by the rival because the possibility for cross-market retaliation is a likely possibility (Feinberg, 1984).

Although there are differing views on the influence that multi-market contact may have on competition, the conclusions of most research (e.g., Bernheim & Whinston, 1990) supports the premise that as multi-market contact increases, intensity of rivalry will decrease. This decrease in competitive rivalry is expected to result in an increase in price dispersion due to firms feeling less pressure to match or be close to competitors' prices. The theoretical predictions are consistent with the rivalry-decreasing effect of multi-market contact on price dispersion and are represented in the following hypothesis:

Hypothesis 1: The degree of multi-market contact among firms competing in a local market is positively related to price dispersion in the local market.

Market Concentration within a Local Market

Prior studies have examined the relationship between market concentration and price dispersion in a market. Market concentration is the degree of dominance of firms selling similar products within a specific market. Greater concentration of market share increases the market power of the dominant firms, which in turn results in higher prices. In the extreme case of concentration, a single firm totally dominates the market (i.e., monopoly). The concept of greater market concentration leading to greater market power of dominant firms and resulting in higher prices, has been well documented and is one of the main justifications for the U.S. Government monitoring and limiting industry concentration.

Price dispersion has an inverted-U relationship with market concentration. In the case of the city-pair routes in this study, the relationship of price dispersion to market concentrations is on the side of the inverted-U where the relationship is negative; as concentration increases, price dispersion decreases.

Market concentration is typically measured by the Herfindahl index (also referred to as the Herfindahl-Hirshman index), which is the market share for each firm competing within a market, squared, and then summed. Market concentration is one of the independent variables applied by Borenstein and Rose, (1994); Hayes and Ross, (1998); and Zhao (2006) to evaluate the causes of price dispersion. All three of these studies find the expected result that price dispersion is inversely related to concentration. Simply stated, as a market becomes more concentrated, price dispersion tends to be reduced. In this study, the city-pair route is the sub-market of interest and therefore, concentration of airlines is calculated using the Herfindahl index methodology on each city-pair route. The following hypothesis reflects the expected inverse main effect relationship between market concentration (city-pair routes in this study) and price dispersion.

Hypothesis 2: The degree of market concentration in a local market is negatively related to price dispersion in the local market.

Multi-Market Contact and Market Concentration Interaction

In this study a major factor of interest is the interaction of multi-market contact, which can potentially affect oligopolistic coordination within specific markets, with market concentration. The effect of multi-market contact on price dispersion is expected to be moderated by market concentration (Jayachandran, Gimeno, & Vanadarajan, 1999). The airline industry is an oligopoly and the local markets tend to exhibit a high degree of concentration. Most of the other studies, which assess the effects of multi-market contact, evaluate markets that are less concentrated with fewer local markets. In this study the local markets are the 5,974 city-pair routes that are analyzed. Based on prior literature, in markets that that are highly concentrated, it is predicted that the effect of multi-market contact on price dispersion is less. As a result, the increase of price dispersion due to increasing multi-market contact is reduced. The following hypothesis reflects this rationale.

Hypothesis 3: When market concentration is greater, the effect of multi-market contact on price dispersion decreases.

FIGURE 2 (See Appendix) shows that at high levels of market concentration, multi-market contact has a lesser effect on price dispersion. Notice that the 'high market concentration' is below the 'low market concentration' line. When market concentration in a market is greater ('high market concentration' in the graph), the effect of multi-market contact on price dispersion is less than when market concentration is less ('low market concentration' in the graph), as stated in the hypothesis.

Market Size

Market size has been measured in several ways, such as the number of customers or sales volume (monetary value or units sold). In this study, market size is the volume of passengers on a city-pair route relative to the most frequently traveled route. In essence, market size measures how many passengers travel on the route, regardless of the number of airlines on the route.

In Borenstein and Rose's (1994) study, market size (referred to as market density) was measured by the total number of flights on the route. They found that in larger markets, there is less price dispersion. This finding is consistent with models of monopolistic competitive price discrimination (Borenstein, 1985; Holmes, 1989) and is hypothesized in this study. The rationale of this finding is that in larger markets there are more customers, who increase the competitive pressure on the airlines, resulting in less price dispersion. Borenstein and Rose's (1994) findings support the hypothesis that market size will increase the intensity of rivalry experienced by a firm. These empirical studies and rationale support the following hypothesis:

Hypothesis 4: The size of the local market is negatively related to price dispersion in the local market.

Route Distance

Route distance is the linear distance between the cities at each end of the city-pair route. This variable was applied as an independent variable by several researchers (e.g., Borentstein, 1989; Evans & Kessides, 1994; Hayes & Ross, 1998) to evaluate pricing related dependent variables. Borentstein (1989) evaluates the importance of route and airport related variables on price levels on airline routes. One of the route variables is route distance and they found route distance to be positively related to the price level on city-pair routes. Route distance is applied by Hayes and Ross (1998) to evaluate the causes of price dispersion. Their research finds that dispersion is greater on longer route distances. This leads to the following hypothesis that on longer route distances there tends to be greater price dispersion.

Hypothesis 5: The distance of a city-pair route is positively related to price dispersion on the route.

Hub Airport

In 1978, the U.S. Congress enacted the Airline Deregulation Act, which transformed the domestic airline industry from extensive government regulation to a new era of competition (Nannes, 2000). Prior to the Airline Deregulation Act, carriers largely provided point-to point service. Following deregulation, the airlines began to consolidate their operations at specific airports, forming what came to be known as hubs. A "hub" airline combines "local" passengers (i.e., those originating at or destined to the hub) with "connecting" passengers (i.e., those passing through the hub) on the same flight. The approach, referred to as hub-and-spoke, allows "hub" airlines to serve more cities from their hubs (known as spoke routes) and offer greater frequency of service with its aircraft than had been possible with point-to-point service.

Notwithstanding the benefits, the dominance of spoke routes by hub airlines raises concern about the exercise of market power on those routes. Prior research shows that airlines can and do charge higher prices on routes connected to hubs than on non-hub routes where they face more competition. Hub control is a measure of market power (Borenstein, 1989). Borenstein finds that airlines had greater market power in their hubs and as result, price levels were higher and price dispersion was less on routes. In our study, the focus is on price dispersion that occurs on the city-pair route for all of the airlines in the study and not the pricing of individual airlines. Hayes and Ross (1998) apply this variable and find that price dispersion was less in hub airports than in non-hub airports. This leads to the following hypothesis that less price dispersion is expected at hub routes.

Hypothesis 6: When a city-pair route is connected to a hub airport, there is a negative effect on price dispersion on the route.

RESEARCH METHOD

The following is a description of the data applied in this study, the empirical model, and the calculation method for the dependent variable, price dispersion measurement:

Data Description

The data used in this study are from the Origin and Destination Survey of Air Passenger Traffic. The Origin and Destination database consists of a 10% random sample of all airline passenger tickets issued by all airlines on a quarterly basis for each city-pair route in the U.S. For cities with multiple airports, the data are at the airport level. This study focuses on the routes of seven network and ten low-fare airlines during the first quarter of 1999. There are approximately 7,000 city-pair routes in this data set. In this study, only the routes with two or more airlines on a route are included. As a result, 5,974 routes are included in this study.

Empirical Model

Multiple regression analysis is applied in this study. The following equation is the empirical model for the conceptual model described above.

$$PRD_{ij} = \beta_0 + \beta_1 MMC_{ij} + \beta_2 HHI_{ij} + \beta_3 MMC_{ij} \mathrm{x} HHI_{ij} + \beta_4 MSZ_{ij} + \beta_5 DST_{ij} + \beta_6 HUB_{ij} + \varepsilon_{ij}$$

where; i and j are the city pairs.

PRD_{ij} = price dispersion on the city pair route

MMC_{ij} = multi-market contact among airlines on the city pair route

HHI_{ij}= market concentration based on airlines on the city pair route

MSZ_{ij} =market size based on passengers on the city pair route

DST_{ij} = route distance between cities on the city pair route

HUB_{ij}=hub airport based on either terminal being a hub

ε_{ij} = error term related to the city pair route

Price Dispersion Measurement – Dependent Variable

The Gini coefficient measures the degree of inequality of a variable in a distribution of its elements.In our study, price dispersion is based on the variation in airline ticket prices for the same city-pair route offered by competing airlines. Gini is calculated from the average price charged to customers by each airline for each city-pair route per quarter. The Gini coefficient (also referred to as Gini index or Gini ratio) is the most widely used statistical measure of income inequity (Abounoori & McCloughnan, 2003). The Gini coefficient is an index of inequality, with values closer to unity associated with higher inequality. The Gini coefficient is expressed as (Abounoori & McCloughan, 2003, p. 505):

$$G = 1 - 2 \int_0^1 l(z)dz$$

where z is the cumulative proportion of price payers (i.e., customers) and l is the corresponding cumulative proportion of prices paid.

FIGURE 3 (See Appendix) provides an example of the Gini coefficient measurement of price dispersion. The Gini coefficient is based on comparing the cumulative share of price paid (vertical axis) relative to the cumulative share of passengers (horizontal axis). The curved line is a graphical representation of price dispersion. The area between the curved line and the 45^o is the Gini coefficient; in this case 0.302. When there is less price dispersion, the Gini coefficient decreases and the price dispersion line approaches the 45^o line. When there is more price dispersion, the Gini coefficient increases and the price dispersion line approaches the lower right corner.

The Gini coefficient is superior in this application to the other measures of inequality mentioned above, due to its inclusion of the measurement of non-normal (and non-uniform) distributions and the potential for calculated values to be continuous, range from zero to one, and ratio data. A value of zero value occurs when these is uniform prices, which means that there is zero price dispersion. The value of zero is referred to as 'perfect equality' and occurs on one route in this data set when there are two airlines with identical average prices. The value of one is referred to as 'perfect inequality' and does not actually occur because it would mean that all passengers except on pays nothing and one passenger pays something.

INDEPENDENT VARIABLES

The following is a description of the independent variables applied in this study and the calculation method for each variable.

Multi-market contact is a measure of the potential for strategic market encounters between airlines (Baum & Korn, 1996). Baum and Korn (1996) develop a methodology for evaluating the level of competition between firms that compete in many different local markets. Baum and Korn's methodology is based on calculating (for only the firms competing in a sub-market) the number of other sub-markets where the firms compete and then divides this number by the maximum number of potential sub-markets where the firms could compete. The range of values for the Baum and Korn's approach to measuring multi-market contact is zero to one. This study applies the Baum and Korn's methodology.

The multi-market contact for firm i in a focal market m is measured using the number of contacts that firm i has with the competitors in market m competing in markets different from focus market $m$at time t as follows:

$$\mathrm{MMC}_{int} = [\Sigma_{j\neq i}\Sigma_{m}\,(\mathrm{D_{imt}} \text{ x } \mathrm{D_{jmt}})]/\,[\Sigma_{m}\mathrm{D_{imt}} \text{ x } \mathrm{N_{MMCt}}],\ \text{for all } j\Sigma_{m}\,(\mathrm{D_{imt}} \text{ x } \mathrm{D_{jmt}})] > 1$$

where,

$\mathrm{D_{imt}}$ is an indicator variable set equal to one it firm i is active in a market m at time t and to zero otherwise.

N is the number of firms j that contact the focal firm i in market m that are multi-market contacts (i.e., that firm i encounters in at least one market other than m) and all other terms are as defined above.

Multi-market contact can vary from zero, when there is no multi-market contact, to one, when firm i engages all other firms in market m in all of M in its own markets. Given that similar indices have been previously used (e.g., Baum & Korn, 1996; Gimeno & Woo, 1996; Fuentelsaz & Gomez, 2006), this approach to measuring multi-market contact provides the possibility of comparing the results of this study with those of the earlier studies.

Market concentration is the degree of dominance by firms selling similar products within a specific market. Market concentration is typically measured by the Herfindahl index (HHI), which is calculated by squaring the market share for each firm (i.e., airline) competing within a market. In this study, the city-pair route is the sub-market of interest and therefore, concentration of airlines is evaluated on each city-pair route. The Herfindahl index is calculated using the number of passengers per airline on the city-pair route each quarter.

The Herfindahl index has been applied as an independent variable in many studies including Borenstein and Rose (1994) and Hayes and Ross (1998) to evaluate the causes of price dispersion in the airline industry. The Herfindahl index can vary from near zero, in a market where a very large number of firms compete, all with near zero market shares, to one, when there is only one firm with 100% market share.

Market size is the number of passengers on a city-pair route. Market size measures how many passengers travel on the route, regardless of the number of airlines on the route. Borenstein and Rose (1994) apply a similar independent variable, based on the total number of flights. In this study, market size is calculated by dividing the number of passengers on the route by the maximum number of passengers on the route with the most passengers on a single city-pair route and can vary from near zero, on a route where there are very few passengers, to one, the route with the most passengers.

Route distance is the linear distance between the cities at each end of the city-pair route. Route distances the United States vary from 11 to 2,770 miles. This variable has been applied in a several studies on pricing levels on airline routes (e.g., Borentstein, 1989; Evans & Kessides, 1994). Hayes and Ross (1998) apply this variable to evaluate causes of price dispersion and scaled route distance by dividing by 1,000. In this study, the route distance variable is calculated by dividing each city-pair route distance by the longest route distance resulting in values from nearly zero to one.

Hub airport is a zero or one, dichotomous variable, which indicates that an airline's hub is at one or both ends of the city-pair route. If neither endpoint is a hub, the value is zero and if either or both endpoints are hubs, the value is one. Hayes and Ross (1998) apply this variable to evaluate causes of price dispersion. Borenstein (1989) apply this variable and found it to be an indicator of market power.

EMPIRICAL ANALYSIS

The following sections explain the descriptive statistics, estimation results for the hypotheses, and the model fit.

Descriptive Statistics

In TABLE 1, the means, standard deviations, and Pearson correlation matrix for the variables of interest are presented. The correlations between the independent variables are relatively small and therefore, multicollinearity is not a concern in this analysis. The largest correlation (0.37) is between market concentration and route distance.

TABLE 1
DESCRIPTIVE STATISTICS (n = 5,974)

			Correlation Coefficients				
Variable	**Mean**	**Std Dev**	**1**	**2**	**3**	**4**	**5**

Price Dispersion	0.059	0.0006					
Multi-Market Contact	0.248	0.0010	0.08				
Concentration	0.458	0.0031	-0.43	0.14			
Market Size	0.027	0.0008	-0.13	-0.29	0.01		
Distance	0.416	0.0031	0.32	0.10	-0.37	-0.09	
Hub Airport	0.354	0.0062	-0.11	-0.19	0.02	0.34	-0.10

Estimation Results

The following estimation results are explained for the hypotheses previously discussed and based on the conceptual framework shown in Figure 1. TABLE 2 provides a summary of the regression results.

TABLE 2
REGRESSION RESULTS

<table>
<tr><th></th><th>Variable</th><th>Hypothesis</th><th>Coefficient Estimate</th><th>Beta</th><th>Pr>|t|</th></tr>
<tr><td>H_1</td><td>Multi-Market Contact</td><td>Degree of MMC is positively related to price dispersion.</td><td>0.193</td><td>0.327</td><td><0.0001</td></tr>
<tr><td>H_2</td><td>Market Concentration</td><td>Degree of HHI is negatively related to price dispersion.</td><td>-0.029</td><td>-0.127</td><td>0.0006</td></tr>
<tr><td>H_3</td><td>MMC x HHI</td><td>As HHI increases, the effect of MMC on price dispersion decreases.</td><td>-0.236</td><td>-0.377</td><td><0.0001</td></tr>
<tr><td>H_4</td><td>Market Size</td><td>Market size is negatively related to price dispersion.</td><td>-0.053</td><td>-0.073</td><td><0.0001</td></tr>
<tr><td>H_5</td><td>Route Distance</td><td>Length of the route is positively related to price dispersion.</td><td>0.033</td><td>0.164</td><td><0.0001</td></tr>
<tr><td>H_6</td><td>Hub Airport</td><td>When a route is connected to a hub, there is a negative effect on price dispersion.</td><td>-0.004</td><td>-0.044</td><td>0.0002</td></tr>
</table>

Multi-Market Contact

H_1 is supported ($\beta_1 = 0.327$), indicating that in city-pair routes where multi-market contact is greater, there is more price dispersion. In other words, when competitors in a local market have more contact in markets, the price dispersion tends to be greater in the local market. This finding is consistent with the research of Baum and Korn (1996), which found that in local markets where multi-market contact is greater, the entry and exit rates are lower, indicating a reduction in competitiveness. This study supports the premise that if firms feel less need to compete aggressively, they have more latitude in pricing, therefore in local markets where multi-market contact is greater, there is larger price dispersion.

The beta coefficient of multi-market contact is relatively large (0.317) compared to all but one of the other beta values, which range from 0.044 to 0.377. This relatively large value indicates that multi-market contact is a key variable in influencing the dependent variable, price dispersion. Multi-market contact has the coefficient estimate of 0.193, which is the highest of the main effect variables and is only second to the interaction variable that has a coefficient estimate of -0.236. This result supports the multi-market contact theory, which postulates that as the degree of multi-market contact increases, price dispersion should increase. This finding demonstrates the considerable positive effect that multi-market contact has on price dispersion.

Market Concentration

H_2 is supported (β_2= -0.127), indicating that in local markets where concentration is greater, price dispersion in that market tends to be less. In other words, in markets where market shares are more concentrated, less price dispersion occurs. These results are consistent with Borenstein and Rose's (1994) study on price dispersion in the U.S. airfare market. They analyzed pricing data to evaluate the effect of competition on price dispersion. Market concentration is one of the variables used by Borenstein and Rose to evaluate the construct 'competition'. Borenstein and Rose found that in local markets where market concentration is higher, there is less price dispersion. Market concentration is also applied by Hayes and Ross (1998), Walsh and Whelan (1999), and Zhao (2006) to evaluate the causes of price dispersion. Their findings reinforce the finding that in more concentrated markets, price dispersion tends to be less.

Market concentration has the coefficient estimate of -0.029, which is relatively small compared to multi-market contact, but still has a significant negative influence on price dispersion. This result supports the oligopoly theory, which postulates that firms collude, either tacitly or purposively, within markets when they recognize their mutual dependence. The more concentrated the market, the greater recognition of the firms' mutual dependence, resulting in less price dispersion. This rationale is consistent with the finding of this study that as concentration in a local market increases, there tends to be less price dispersion. For example, if market concentration on a city-pair route increases from 0.25 to 0.30 (a 20% increase in market concentration) price dispersion can be expected to decrease from 0.040 to 0.038 (a 5% decrease in price dispersion). In comparison to multi-market contact, market concentration has less effect on price dispersion.

Interaction of Multi-Market Contact and Market Concentration

H_3 is supported (β_3 = -0.377), indicating that the effect of multi-market contact on price dispersion is less in local markets where there is greater market concentration. In other words, in local markets where there is a higher degree of market concentration, the increase in price dispersion (that occurs as multi-market contact increases) is less than it would be in less concentrated markets. This finding is consistent with prior literature which indicates that in markets where concentration is greater, the effect of multi-market contact on price dispersion is reduced, and as a result there is less of an increase in price dispersion. This finding demonstrates that even though multi-market competition reduces competitive pressure, when markets are highly concentrated, there are relatively few firms setting prices, which has a reducing effect on price dispersion.

Market Size

H_4 is supported (β_4 = -0.073), indicating that in larger local markets, price dispersion in that market tends to be less. In other words, in larger markets (i.e., more customers), less price dispersion occurs. Market size has the coefficient estimate of -0.053, which is the second highest of the main effect variables. This finding is consistent with Borenstein and Rose's (1994) study, which found that in larger markets, there is less price dispersion. Their findings support the rationale that in larger markets (i.e., more customers) there is more competitive pressure on the airlines, resulting in less price dispersion. Furthermore, the finding of this study is consistent with models of monopolistic competitive price discrimination (Borenstein, 1985; Holmes, 1989). For example, if market size on a city-pair route increases from 0.25 to 0.30 (20% increase in market size) price dispersion can be expected to decrease from 0.024 to 0.031 (8% decrease in price dispersion). In comparison to multi-market contact, market size has less effect on price dispersion, but more than market concentration.

Route Distance

H_5 is supported (β_5 = 0.164), indicating that as route distance increases, there is greater price dispersion. In other words, longer routes tend to have more price dispersion than shorter routes. Route distance has the coefficient estimate of 0.033, which is the third highest of the main effect variables. The rationale behind this finding is that on longer routes, there tends to be less competition, which reduces the competitive pressure to compete on price. Furthermore, some passengers prefer more services on longer distance flights due to the longer times that they spend in the airplane, which leads to less price sensitivity and more price dispersion. The finding of this study is consistent with prior research of Hayes and Ross (1998) who found that dispersion increases on longer route distances. For example, if route distance on a city-pair route increases from 0.25 to 0.30 (20% increase in route distance) price dispersion can be expected to decrease from 0.055 to 0.057 (3% increase in price dispersion). In comparison to multi-market contact, route distance has much less effect on price dispersion.

Hub Airport

H_6 is supported (β_6 = -0.044), indicating that when the city-pair route is connected to an airport that is a hub for at least one airline (other than a focal airline), price dispersion on that route tends to be less. In other words, in a local market where there is a dominant, local firm, (but not dominant nationally) less price dispersion occurs. This finding is consistent with prior research of Hayes and Ross (1998) who found that dispersion was less in routes connected to hub airports than in routes connected to non-hub airports. Hub airport has the coefficient estimate of -0.004, which is the third highest of the main effect variables, which is the smallest of all the coefficients, but still has a significant influence on price dispersion. For example, if at least one of the airports on a city-pair route becomes a hub (the ‘hub airport’ variable changes from 0 to 1), price dispersion can be expected to decrease from 0.047 to 0.043 (9% decrease in price dispersion). In comparison to a 10 % increase in multi-market contact, if at least one of the airports on a city-pair route becomes a hub, the magnitude of the effect of the hub airport is similar, but opposite in direction of a 10 % increase in multi-market contact’s effect on price dispersion.

Model Fit

One of the key objectives of this research is to evaluate and demonstrate the benefit of including an evaluation of the macro competitive environment (i.e., multi-market contact) on price dispersion in local markets. TABLE 3 provides the comparison of the results from the models discussed. When market concentration is applied exclusively to explain price dispersion, the adjusted R^2 value is 0.182, meaning that market concentration explains 18.2% of the variation in price dispersion. By including multi-market contact and the interaction of concentration and multi-market contact, 20.9% of the variation is explained and with the full model, 24.2% is explained. The increase in adjusted R^2 from 0.182 to 0.242 is a 33% increase in adjusted R^2 and demonstrates the value of considering multi-market contact and local market conditions when evaluating price dispersion.

TABLE 3
COMPARISON OF RESULTS

Condition	**Adjusted R^2**	**Change in Adjusted R^2**	**Percent Improvement**
Market concentration alone	0.182	-----	-----

Multi-market contact with market concentration and interaction (MMC x HHI)	0.209	0.027	15%
Full model	0.242	0.060	33%

CONCLUSIONS AND IMPLICATIONS

The purpose of this empirical study has been to comprehensively evaluate the effects of several key competition related factors, especially multi-market contact, on price dispersion in the airline industry. This study supports the concept that firms respond to competition by searching for alternative ways to improve their performance. One of our research goals is to increase the understanding of the effect of multi-market contact on price dispersion. Prior research has not included multi-market contact to evaluate price dispersion. The results show the importance of including multi-market contact and other key market characteristics in models that addresses competition within markets.

The conceptual framework developed in this article makes a significant contribution to the understanding of the competitive determinants on price dispersion in a complex, service market. The results have the potential for application in other fixed capacity, service applications, such as entertainment (including sporting event venues), other forms of public transportation (e.g., trains, buses, and ships), and distribution of energy (e.g., electricity). This study expands the understanding of competition theory that may be useful to academic researchers and marketing practitioners. Also, the findings provide information that may be useful in the development of future government policies related to competition's effect on market efficiency and social welfare.

Theoretical Implications

The findings of this empirical analysis have important theoretical implications. The most significant academic contribution of this study is the development of a conceptual framework of the competitive determinants of price dispersion, including multi-market contact, in a complex service market context. The moderating effect of market concentration on multi-market contact has price dispersion has useful implications for pricing research. Linked oligopoly theory (Solomon, 1970) suggests that the degree of linkage between the firms in multiple markets is an imperative determinant of performance in an oligopolistic market. This theory assumes that multi-market firms coordinate their operations across markets and that this coordination affects the intensity of rivalry. In this study, the interaction of multi-market contact and market concentration has the highest coefficient estimate (-0.236) and beta (0.377) of any variable in the model. This result demonstrates that increasing market concentration dampens the effect that multi-market contact has on price dispersion. Therefore, if price dispersion is desirable in order to increase social welfare and improve industry performance, less market concentration is beneficial.

An additional theoretical implication is the extension of multi-market competition theory to price dispersion. This theory suggests that when two rival firms compete in multiple markets, intensity of rivalry decreases due to mutual forbearance (Bernheim & Whinston, 1990; Baum & Korn, 1996; Jayachandran, Gimeno, & Varadarajan, 1999). This decrease in rivalry results in greater price dispersion due to firms feeling less pressure to match or be close to competitors' prices. This study shows that multi-market contact has a significant influence on price dispersion. Multi-market contact has the highest coefficient estimate (0.193) and beta (0.327) of the main effect variables. This result supports the theory by demonstrating that as the degree of multi-market contact increases, price dispersion tends to increase.

Managerial Implications

Airlines, as well as other fixed capacity, service organizations, are seeking information to help them improve the financial performance of their organizations. This study has several useful and valuable implications for managers. The information presented can be useful to marketing managers in developing pricing strategies by helping them better understand likely competitive reactions to changes in market structure. This information about the effects of competition on price dispersion applies to managers working for firms that are considering entering new markets. Also, the information can be useful to mangers of rival firms working in the local market when a rival firm enters the local market.

Managers can apply this framework on price dispersion is number of ways. The following are a few key opportunities:

1. Evaluating the effect of strategic moves (e.g., pricing strategies, market entry and exit) on local market price dispersion).
2. Improving the evaluation of local market attractiveness before firms enter new, local markets; revenue potential and profit potential are important considerations. Price dispersion has an important influence on revenue and profitability.
3. Predicting how rival firms, who they compete against in other markets, may affect the price dispersion in the local markets, if their firm or a rival firm enters the local market.

Managers have the means to measure all of the independent variables in this study. By measuring and evaluating these variables, the model developed in this study predicts the effect of competition on price dispersion. The findings suggest that managers can benefit from monitoring and assessing multi-market contact and market concentration in local markets when making pricing decisions. A better understanding of the factors (i.e., multi-market contact, market concentration) that cause price dispersion to expand or contract provides important and useful information to managers developing pricing strategies and setting prices.

Future Research

Several implications and direction for future research can be drawn from the results of this study, as well as from some of the limitations. First, since the findings of this study are based on firms in a single, geographically bounded industry during one quarter, it is possible that the results reflect some factors specific to the industry, geographic region, or period under study. Further replications of this study in other circumstances are needed to address this possibility.

Second, development of a comprehensive variable for strategic competitive heterogeneity that may include multi-market contact and strategic similarity is worth exploring. One of the fundamental issues is to determine what characteristics of firms set them apart from competitors in ways that affect their marketing strategies and how consumers perceive value of their product offerings. When firms can increase the perceived value of their product offerings, they can increase sales revenue, profitability relative to other firms with less attractive products. Findings of this research show that multi-market contact in conjunction with market concentration improves the potential for firms to increase their financial performance in the marketplace.

REFERENCES

Abounoori, E., & McCloughan., P. (2003). A Simple Way to Calculate the Gini Coefficient for Grouped as Well as Ungrouped Data. *Applied Economic Letters,* 10, 505-509.

Baum J. A. C., & Korn, H. J. (1996). Competitive Dynamics of Interfirm Rivalry. *Academy of Management Journal*, 39, (2), 255-291.

Bernheim, D., & Whinston, M. D. (1990). Multimarket Contact and Collusive Behavior. *Rand Journal of Economics*, 21, 1-26.

Biswas, A., Dutta, S., & Pullig, C. (2006). Low Price Guarantees as Signal of Lowest Price: The Moderating Role of Perceived Price Dispersion. *Journal of Retailing*, 82, (3), 245-257.

Borenstein, S., & Rose N. L. (1994). Competition and price dispersion in the U.S. Airline Industry. *Journal of Political Economy*, 102, (4), 653-683.

Borenstein, S. (1989). Hubs and High Fares: Dominance and Market Power in the U.S. Airline Industry. *Rand Journal of Economics,* 20, 344-365.

Borenstein, S. (1985). Price Discrimination in Free-Entry Market. *Rand Journal of Economics*, 16, 380-397.

Chen, P. Y. & Hitt, L. M. (2001). Brand Awareness and Price Dispersion in Electronic Markets. *22nd Annual International Conference on Information Systems*, 233-246.

Clemons, E. K., Hann I. H., & Hitt, L. M. (2002). Price Dispersion and Differentiation in Online Travel: An Empirical Investigation. *Management Science*, 48, 534-549.

Evans, W. N., & Kessides, I. N. (1994). Living by the Golden Rule: Multimarket Contact in the U.S. Airline Industry. *The Quarterly Journal of Economics,*109, (2), 341-366.

Feinberg, R. M. (1984). Mutual Forbearance as an Extension of Oligopoly Theory. *Journal of Economics and Business*, 36, 243-249.

Dixit, A. Whipple, T. W., Zinkham, G. M., & Gailey, E. (2008). A Taxonomy of Information Technology-Enhanced Pricing Strategies. *Journal of Business Research*, 61, 275-283.

Gimeno, J. & Woo, C. Y. (1996). Hypercompetition in a Multimarket Environment: The Role of Strategic Similarity and Multimarket Contact in Competitive De-Escalation. *Organization Science*, 7, 322-341.

Grewal, D., & Marmorstein, H. (1994). Market Price Variation and Consumers' Price Search Decisions for Durable Goods. *Journal of Consumer Research*, 21, (3), 453-460.

Hayes, K. J., & Ross, L. B. (1998). Is Airline Price Dispersion the Result of Careful Planning of Competitive Forces? *Review of Industrial Organization,* 13, 523-541.

Holmes, T. J. (1989). The Effects of Third-Degree Price Discrimination in Oligopoly. *American Economic Review*, 79, (1), 244-250.

Jayachandran, S., Gimeno J, & Varadarajan, P. R. (1999). The Theory of Multimarket Competition: A Synthesis and Implications of Marketing Strategy. *Journal of Marketing*, 63, 49-66.

Johnson, E. J., Moe, W. W., Fader, P. S., Bellman S., & Lohse, G. (2004). On the Depth and Dynamics of Online Search Behavior. *Management Science,* 50, (3), 299-308.

Karnani, A., & Wernerfelt, B. (1985). Multiple Point Competition. *Strategic Management Journal,* 6, (1), 87-96.

Lindsey-Mullikin, J., & Grewal, D. (2006). Imperfect Information: The Persistence of Price Dispersion on the Web. *Journal of Marketing Science*, 34, (2), 236-243.

Nannes, J. M. (2000). Statement Before the Committee of the Judiciary U.S. House of Representatives Concerning Airline Hubs and Mergers. Department of Justice, Retrieved April 24, 2007 from http://www.usdoj.gov'atr/public/testimony/4956.htm.

Pan, X., Ratchford B. T., & Shankar, V. (2004). Can Price Dispersion in Online Markets Be Explained by Differences in e-Tailer Service Quality? *Journal of the Academy of Marketing Science,* 30, (4), 433-445.

Solomon, E. H. (1970). Bank Merger Policy and Problems: A Linkage Theory of Oligopoly. *Journal of Money, Credit, and Banking,* 2, (3), 323-336.

Stigler, G. J. (1961).The Economies of Information. *Journal of Political Economy*, 69, 213-225.

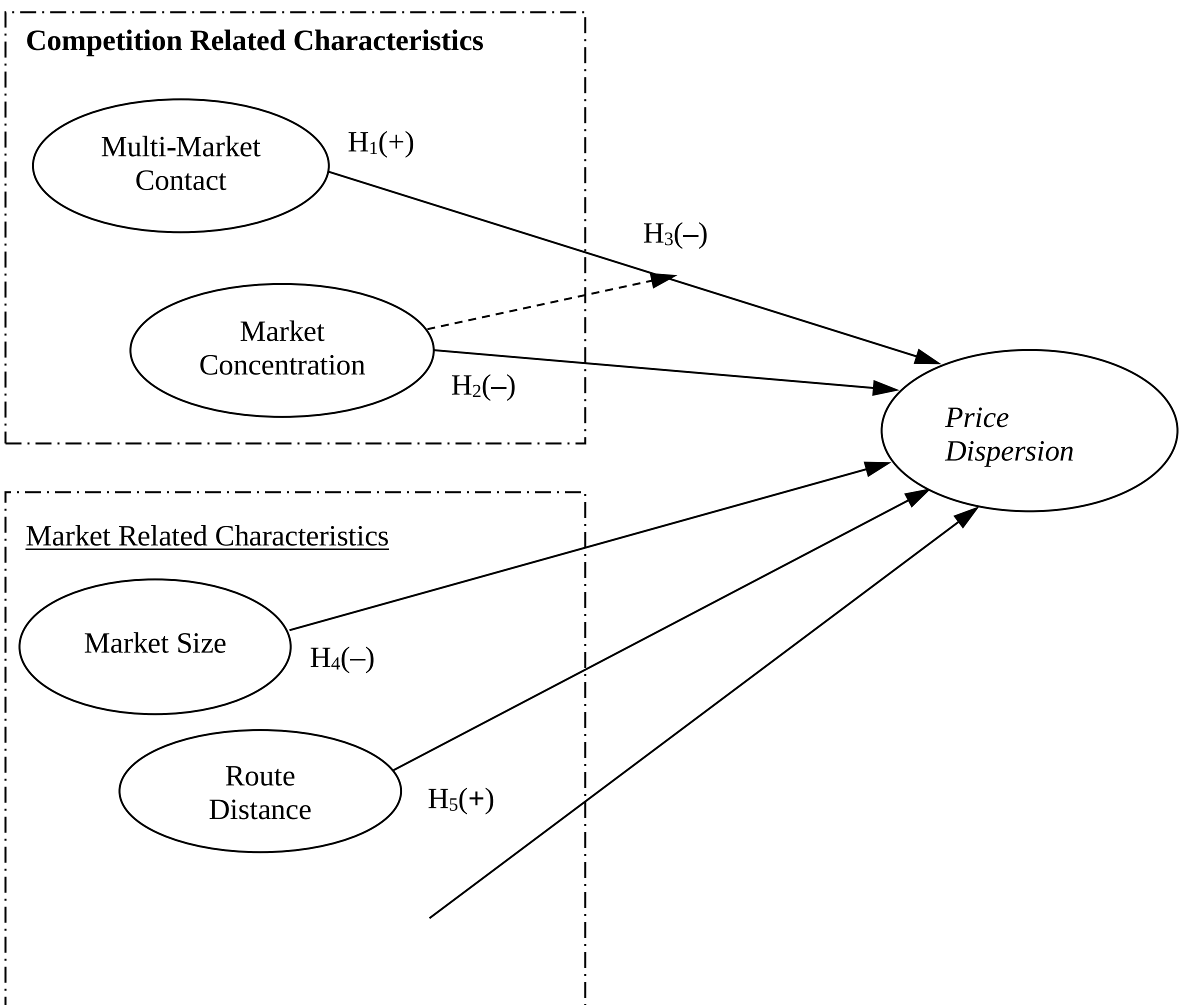
Tellis, G. J. (1986). Beyond the Many Faces of Price: An Investigation of Pricing Strategies. *Journal of Marketing,* 50, (4), 146-160.

Walsh, P. P., & Whelan, C. (1999). Modeling Price Dispersion as an Outcome of Competition in the Irish Grocery Market. *Journal of Industrial Economics,* 47, (3), 325-343.

Zhao, Y. (2006). Price Dispersion in the Grocery Market. *Journal of Business,* 79, (3), 1175-1191.

APPENDIX

FIGURE 1
CONCEPTUAL FRAMEWORK OF PRICE DISPERSION



Note: Dotted line indicates interaction between variables.

FIGURE 2
INTERACTION EFFECT BETWEEN MMC AND MARKET CONCENTRATION

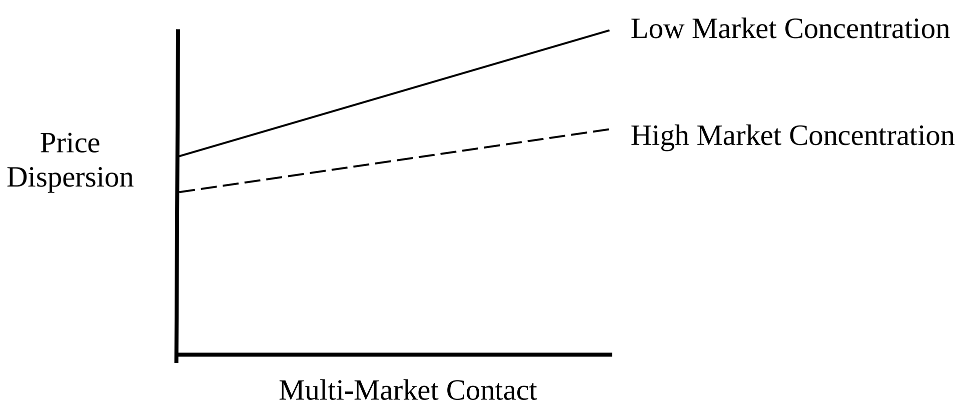
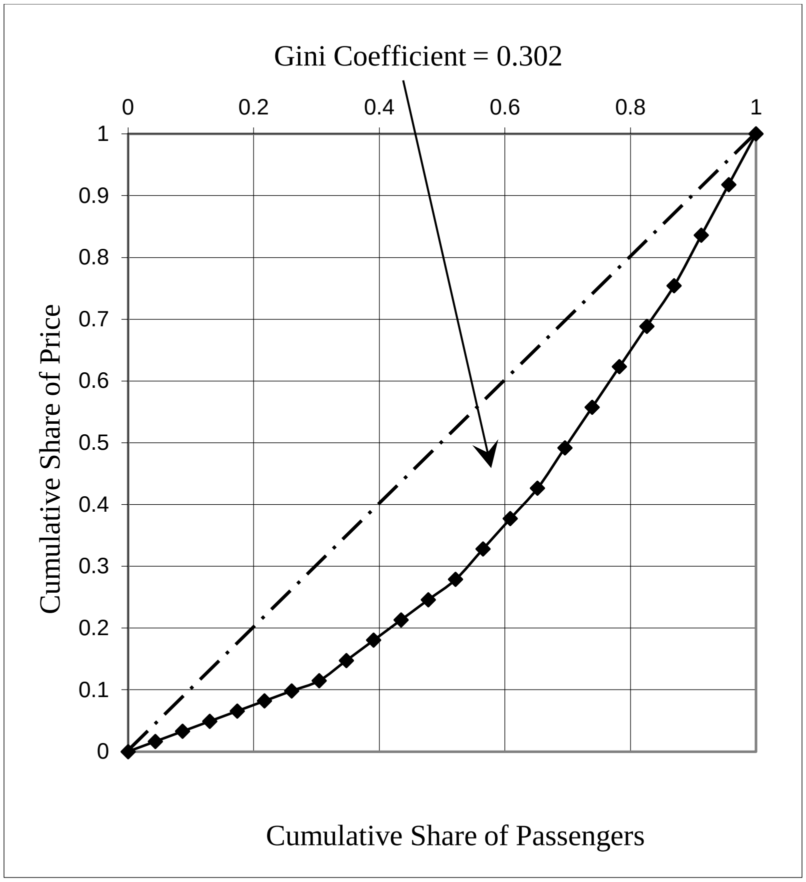


FIGURE 3
GINI COEFFICIENT



Gini Coefficient = 0.302
0
0.2
0.4
0.6
0.8
1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Cumulative Share of Price
Cumulative Share of Passengers

Three Junctures for the Internationalization of the Renminbi (RMB)

Thomas Wai-kee Yuen
Hong Kong Shue Yan University

As China's economy continues to grow, it is agreed worldwide that the Renminbi (RMB) should play a more important role. "Prudence" has always been the policy style of China. To satisfy the condition, this paper foresees that the process of internationalization of the RMB needs to pass through three stages (junctures). The first would be to establish arrangements for cross-border settlement of transactions in the RMB. The second stage would be to diversify the economic growth model. The final stage would be the development of a financial market to protect against any external shocks.

THREE JUNCTURES FOR THE INTERNATIONALIZATION OF THE RMB

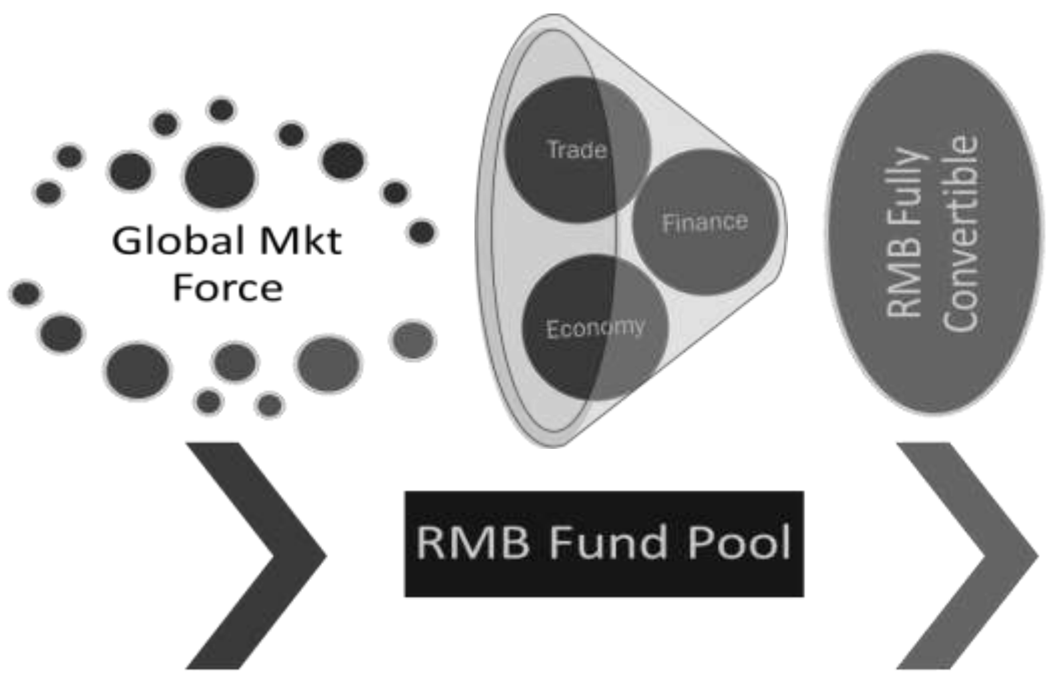
By the end of 2010 China's GDP was worth about $5.7 trillion. In terms of purchasing-power-parity adjustment, this represented about 13% of global GDP (Source: IMF, WEO Database, October 2010). As China's economy continues to grow and would even surpass the western major economies within a decade, it seems only natural that the RMB should be internationalized. As an international currency, the RMB should be widely accepted, globally, in trade invoicing and settlements and in financial markets, and would serve as a store of value (Kene, 1983; Gao and Yu, 2009; Chinn and Frankel, 2005). For example, the US dollar, the major international currency, is widely accepted for quotations and payments in trade, in foreign exchange markets and in commodities markets. Tourists usually use the US dollar across borders to make their payments. In fact, all over the world, public and private institutions are willing and able to hold US dollar denominated financial assets as a store of value. Governments use the US dollar as a reserve currency as well as a tool for foreign exchange rate interventions (Genberg, 2009).

In the IMF's World Economic Outlook it was forecast that China's output, in terms of purchasing-power-parity, would surpass that of the USA in 2016 (Source: IMF, WEO, April 2011). Justin Lin, the World Bank's chief economist, believes that China will overtake the USA and become the world's largest economy within the next two decade (Finance Markets, August 2011). Yet all these predictions ignore the potential risk caused by the imbalance between China's economic activities and the role of the RMB in the world market. As the world's manufacturing centre, China has overtaken Germany as the world's biggest exporter. Moreover, China has the largest foreign reserves and attracts the greatest amount of foreign direct investment. But the RMB still plays only a minor role in trade settlements, in international financial markets and as a reserve currency. This imbalance in the role of the RMB reflects the fact that the participation of China in the global economy is still limited to the manufacturing sector. It is agreed worldwide that, to ensure the recovery of the global economy and the further growth of China, China should be more closely integrated with the global economy through her financial sector. Yet a liberalization of China's financial sector may cause fluctuations in the RMB, and this would hurt foreign investors in China, alter world trade patterns and harm the global economy.

Determining how fast the process of RMB internationalization should be is an art in itself. Different points of view provide different answers. From the market perspective or a Western view point, China should open its capital account, deregulate all unnecessary control over the RMB and let the market handle the process. Kene, 2009 considers that the first condition for a currency to become internationalized is that "the government must remove all restrictions on the freedom of any entity, domestic or foreign, to buy or sell its country's currency, whether in the spot or forward market" (Kene, 2009, p.3).

However, from the point of view of the Chinese authorities, in order to be a responsible member in the global economy, China needs to avoid any harmful fluctuation of the RMB during the process of its internationalization. It has been reiterated many times by the Chinese authorities that any reform of the RMB should be gradual and controlled. In the third quarterly monetary policy report of the People's Bank of China, 2009), it was stated that the RMB exchange rate formation mechanism should follow the principles of initiative, controllability and gradualism. Yet the call in global society for a reform of the RMB exchange rate is getting louder, as the strength of the Chinese economy continues to grow. "Prudence" has always been the preferred policy style of the Chinese authorities, and one possible future scenario for the reform of the RMB is that they will make use of the market to build a firewall to protect the RMB against harmful speculation. That means it is necessary to ensure that the size of the RMB market pool, in terms of both demand and supply, is large enough to absorb any unexpected shocks. As Zhu (2011), points out, emerging markets need to maintain macroeconomic stability and external buffers if their policies are to work effectively. To satisfy this condition, this paper foresees that the process of internationalization of the RMB needs to pass through three stages (junctures). The following figure 1 outlines the conceptual framework.

FIGURE 1
THREE STAGES FOR INTERNATIONALIZATION OF RMB

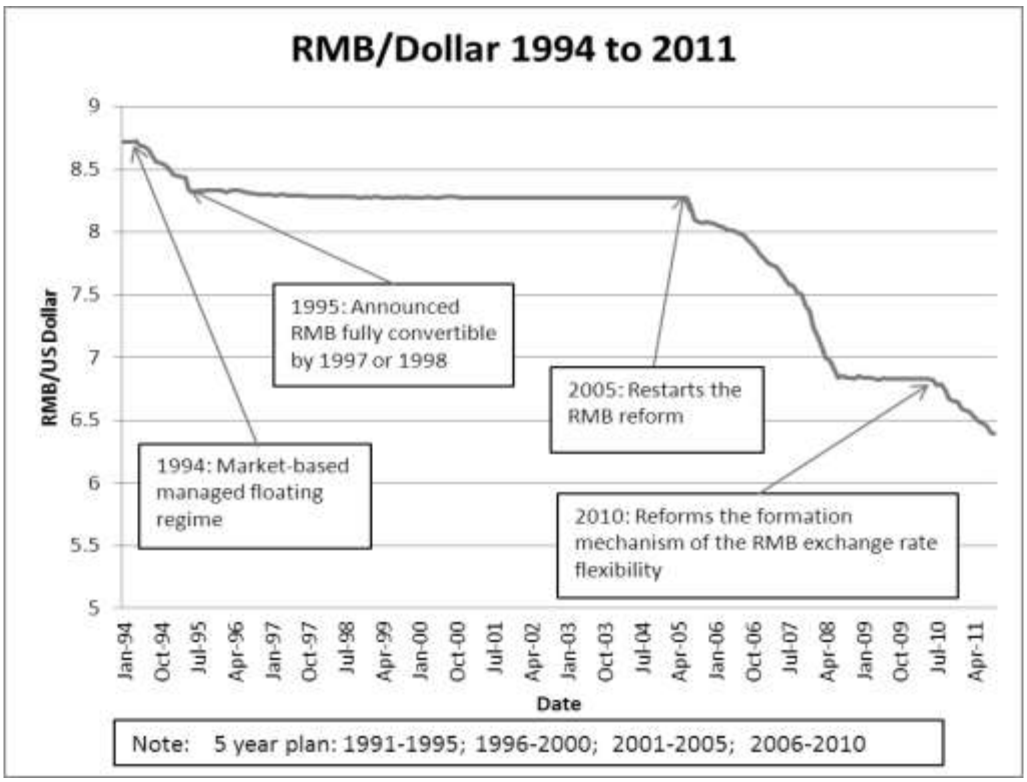


The first would be to establish close trade relationships or free trade agreements and arrangements for cross-border settlement of transactions in the RMB with emerging economies, especially the other countries in the BRICs group. The second stage would be to rebalance the economic growth model from an export-led growth model to an export-consumption-technology led model. The final stage would be the development of a RMB fund pool, including both onshore and offshore RMB centres, that is deep and wide enough to defend against any external shocks.

RECENT REFORMS IN THE CONVERTIBLE SCHEDULE OF THE RMB

The following figure 2 shows that every reform in the RMB starts with a transformation of China's economy and slows down when there is global financial instability. In China, the transformation of the economy is triggered by the Five-Year Plan. In 1994, China implemented a market-based floating exchange rate regime in which the RMB is allowed to float within a band. To achieve membership of the World Trade Organisation (WTO), in 1995 the Governor of China's central bank announced that the RMB would be fully convertible by 1997 or 1998. China reached its convertibility goal for the current account by the end of 1996 (1996 was the beginning of the Ninth Five-Year Plan). However, due to the 1997 financial crisis in Asia, the schedule for achieving full convertibility was quietly abandoned.

FIGURE 2
REFORM OF RMB 1994-2011



Sources: Data from UBC's Sauder School of Business

Almost ten years later,, in July 2005, the Chinese authorities announced the restart of the 1995 schedule to make the RMB fully convertible schedule, re-launching the RMB reform leading to a greater exchange rate flexibility (2006 was the beginning of the Eleventh Five-Year Plan). However, the 2008 global financial crisis froze this process for two years. By June 2010 China had further reformed the formation mechanism of the RMB exchange rate flexibility. At the beginning of 2011, the People's Bank of China announced that China would take further steps to improve the RMB formation mechanism (2011 is the beginning of the Twelfth Five-Year Plan). It is therefore to be expected that the next movement towards the internationalization of the RMB will come in 2016, i.e. the beginning of the next Five-year plan. Yet the conditions needed for this next step forward depend on the existence of a stable global financial environment. Previous history shows that internationalization of the RMB is not a standalone issue, and is closely related to the economic development of China and the stability of the global financial markets.

CROSS-BORDER TRADE SETTLEMENTS

According to the following table 1, China picked up about 10% of world trade. This indicates that trade settlements have a huge potential for contributing to the international use of the RMB.

TABLE 1
CHINA CONTRIBUTION TO THE WORLD TRADE 2010

	Value $billion	Rank	Global Share %
Merchandise trade			
Export	1578	1	10.4%
Import	1395	2	9.1%
Service trade			
Export	170	4	4.6%
Import	192	3	5.5%
Source: WTO press release 7 April 2011, PRESS/628			

In April 2009, the Chinese authorities launched a pilot project to allow exporters and importers in Shanghai, southern Guangzhou, and the cities of Shenzhen, Zhuhai and Dongguan to settle cross-border trade deals in RMBs. By the end of 2010, this project had been extended to a further 20 provinces and cities. At the same time, the overseas areas included in the project were expanded to cover not only Hong Kong and Macao and the ASEAN countries but also all of China's trading partners. Since then the use of the RMB in cross-border trade settlements has continued to grow at an accelerating pace. By February 2011, about RMB725 billion ($114 billion) of trade was settled in RMBs, which was 201 times greater than the amount in 2009 (People's Daily, March 2011). However according to data provided by the People's Bank of China (BOC) in the first quarter of 2011, RMB725 billion still only represents about 7% of the cross-border trade settlements.

One of the major steps taken by the Chinese authorities to promote the use of the RMB in cross-border trade settlements was the establishment of regional trade agreements. The above table shows that regional and emerging economies (ASEAN, BRI and South Korea) represent about 30% of total Chinese trade. Learning the lesson from the 1997 Asian financial crisis, closer links with the Asian region's economies have been created. The ASEAN–China Free Trade Area (ACFTA) became effective on 1 January 2010 and China is also negotiating a regional trade arrangement with India and seeking more trade co-operation with Russia. In March 2006, China and India set up a joint task force to study the feasibility and benefits that could be derived from a regional trading arrangement between the two countries (Bhattacharya and Bhattacharyay, 2006). In November 2010, China and Russia agreed to use their own currencies for their bilateral trade at a meeting in St. Petersburg. Recently, in May 2011, China, Japan and South Korea, meeting on the side-lines of the Asian Development Bank (ADB) annual meeting in Hanoi, announced that they would study the use of their own currencies in trade settlements with one another. It is this co-operation between regional and emerging countries that has enabled emerging countries to safely navigate through the recent global economic instability. However, the intention to use the RMB for cross-border trade settlements is still applied only on a voluntary basis.

TABLE 2
CONTRIBUTION OF CHINA'S MAJOR TRADING PARTNERS TO TOTAL TRADE 2010

	Total Trade	Exports to	Imports from
EU	17%	20.10%	13.20%
US	13.60%	18.30%	8.00%
Japan	10.50%	7.40%	13.80%
ASEAN	10.30%	8.90%	12.10%
Hong Kong	8.10%	14.10%	0.70%
South Korea	7.30%	4.40%	10.80%
BRI	6.40%	6.10%	6.60%
Source: IMF Direction of Trade Statistics ASEAN: ASEAN members include Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar (Burma), the Philippines, Singapore, Thailand, and Vietnam. BRI: Brazil, Russia, India			

Today, cross-border trade settlements tend to concentrate on imported goods and the transactions tend to be concentrated in Hong Kong. In the first quarter of 2011 about 86% of cross-border trade settlements were handled by Hong Kong (Sources: People's Daily online, June 2011). For companies in China, the use of the RMB in trade settlements can certainly reduce their transaction costs but for their trading partner, especially western customers, this is not the case. The crucial point is that western companies need to have a channel of access to the RMB market. This is the reason why most of the RMB trade settlements take place in one of the major offshore RMB centres, namely Hong Kong. In Hong Kong, with its linked exchange rate system and well-developed financial infrastructure, a company can borrow US dollars at a low interest rate and deposit them in RMBs at a high rate. This creates a huge pool (outside Mainland China) of RMBs which is accessible to western companies. Additionally, it is the strategic plan of the Chinese authorities to turn Hong Kong into an RMB offshore centre. It is obvious that the development of the use of the RMB for cross border trade settlements is closely related to the financial liberation of China.

In a demand driven market, it is easier for a consumer to convince a supplier to settle the transaction in their own currency. As shown in the above table 2, China's regional and emerging trading partners contributed a larger proportion of imports than of exports. Altogether, Japan, ASEAN, South Korea and BRI contributed 43.3% to total imports and 26.8% to total exports. In the reverse case; the western countries, the EU and the USA contributed 38.4% to exports and 21.2% to imports. This is the reason why recent progress in China's bilateral trade arrangements is concentrated in the regional and emerging trading partners.

To increase the incentive for foreign countries to use the RMB in cross border trade settlements, China needs to rebalance her growth model from an export-Capital formation-led growth to an export-consumption-technology-led growth. With the huge size of the consumption market, it is becoming easier to convince other countries to use the RMB for their trade settlements.

Taking the above into consideration, the future development of RMB cross-border trade settlements will start in a nearby area such as Hong Kong and then extend to regions in which the economies are closely linked such as Japan, ASEAN, South Korea and BRI, before ultimately becoming global. Such a development would, of course, be constrained by the development of the Chinese consumption market and the liberalization of China's financial market.

STRUCTURAL CHANGE OF THE CHINESE ECONOMY

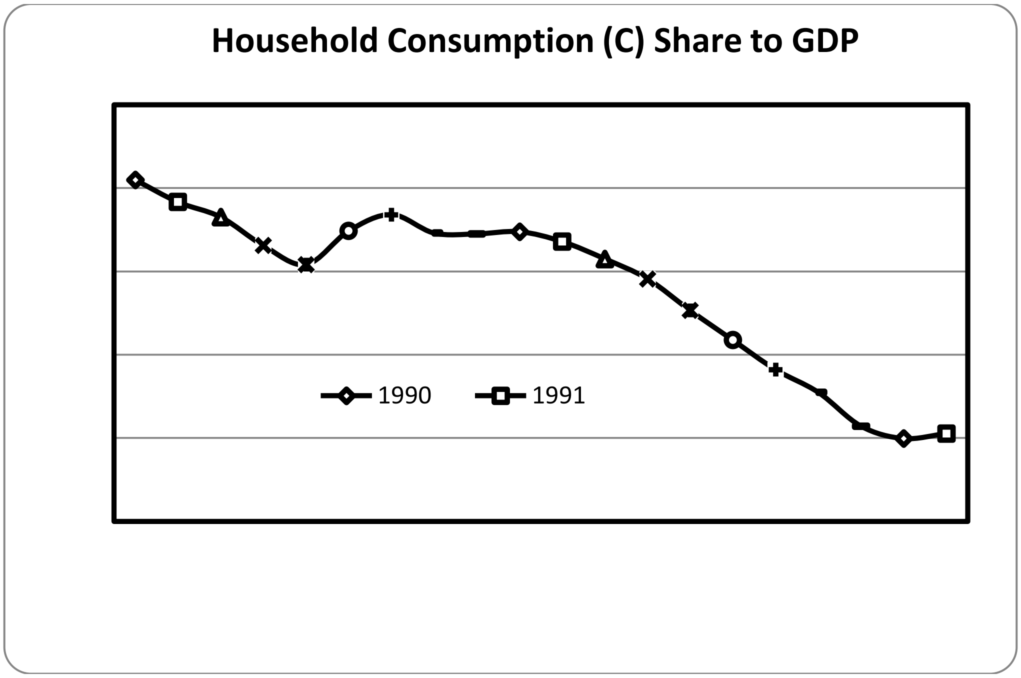
To promote the internationalization of the RMB, the Chinese economy needs to be stable and its growth needs to be sustainable. For the past two decades the Chinese economy has managed to maintain an average GDP growth rate of 10%. The recent western debt crisis will force the western authorities to cut their fiscal budget, thus reducing their aggregate demand. It is expected that the western economies will grow only slowly over the next few years and the demand for China's exports will be reduced. In addition, the appreciation of the RMB, as it goes international, will also contribute to reducing the level of exports. China can no longer depend on exports to maintain her high growth rate. The following figure 3 shows that the appreciation of the RMB (after the reform in 2005) has caused the export to GDP ratio to fall from its peak (39%) in 2006 to 27% in 2009. It is widely agreed that the engine for growth comes from exports and fixed capital formation, but China's growth model is now running into a bottleneck.

FIGURE 3
CHINA'S EXPORT TO GDP RATIO

Source: World Bank

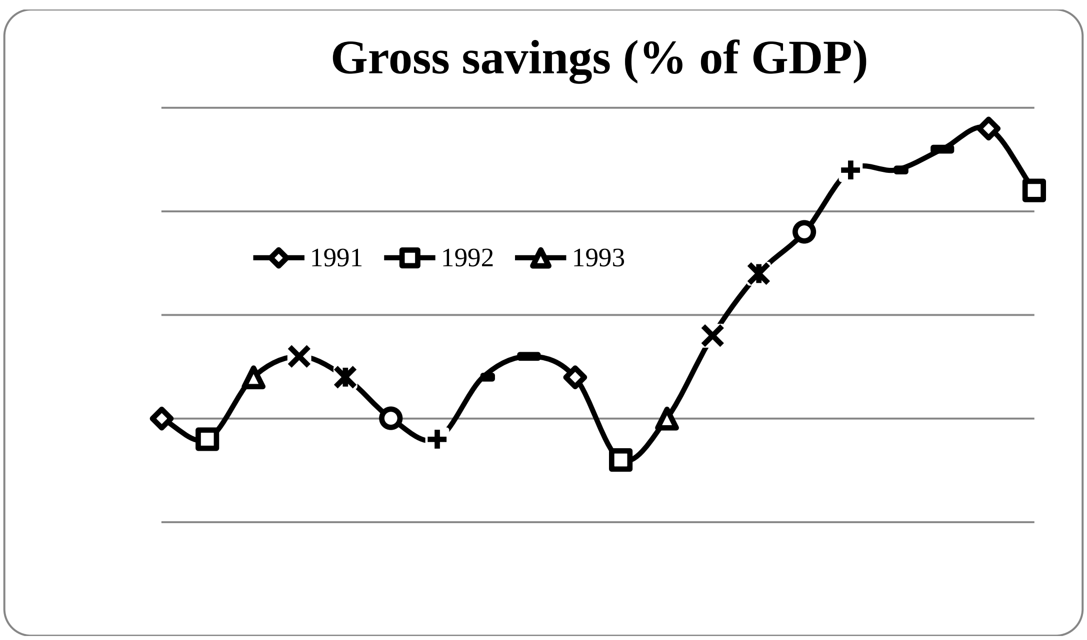
Progress towards the internationalization of the RMB depends on the economic power of China, so the expected slowdown of growth in western economies provides China with an opportunity to pick up a larger share of the global economy and this would be favourable for the internationalization of the RMB. But to take advantage of this opportunity, China needs to change its export-led growth model.
Indeed, in the Eleventh five year plan (2006 to 2010), the Chinese authorities recognized the importance of rebalancing the growth to domestic consumption orientated model. However, not everything went according to plan; the following figure 4 shows that the household consumption to GDP ratio continued to decline, from 50% in 1990 to 35% in 2009. Grossing savings as a percentage of GDP rose from 39% in 1992 to 51.4% in 2008. The literature has reviewed many explanations for the high savings rate in China, such as the weak social security net, the lack of investment tools and the bias towards consumption (Blanchard and Francesco, 2006; Kuijs, 2006).

FIGURE 4
CHINA'S HOUSEHOLD TO GDP RATIO



Source: National Bureau of Statistics of China

FIGURE 5
CHINA'S GROSS SAVING TO GDP RATIO



Note: Gross savings are calculated as gross national income less total consumption, plus net transfers.
Source: World Bank national accounts data, and OECD National Accounts data files.
Catalogue Sources: World Development Indicators

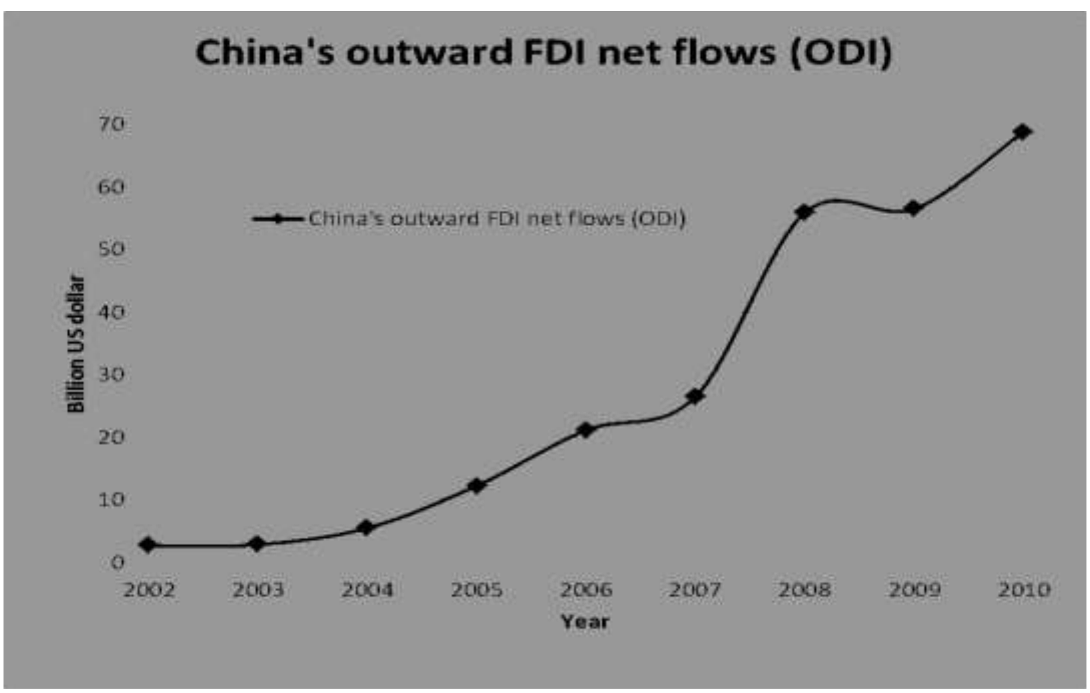
The following figure 5 shows that the waves of increases in savings follow closely the economic crises. The first wave began in 1992, following the 1990-1991 US economic recessions, and the second wave began in 1997, reflecting the Asian financial crisis. After 2001 (in reaction to the IT bubble) the savings continued to increase through the SAR crisis (2003) and the global financial crisis (2008). They began to fall by 2009 in line with the recovery of the world economy. As predicted by the life cycle and permanent income hypothesis, Chinese people tend to save for their future whenever there is an economic downturn.

The financial market in China is still at the development stage, and there are not enough tools available to investors to use to hedge against any potential risk to their wealth. The limited ability of the Chinese household to hedge against any uncertainty about their future living standards causes Chinese people to save more. Channelling these savings into consumption will depend on the liberalization of the Chinese financial market.

LIBERALIZATION OF THE FINANCIAL MARKET

The new challenge now facing the Chinese economy is to balance growth and inflation, especially food and property inflation. With the inadequacy of the tools available in the financial market to fight against inflation, money tends to float into the property market. Buying real assets, and in particular property, is a traditional way that Chinese people hedge their wealth against inflation. However, too much money washing around the highly inelastic supply of property, especially in the short run, will push property prices up and create a speculative asset bubble. High property prices will also increase the costs for businesses, for example rental costs, thus spreading inflation from one sector into another. The Chinese authorities have tried hard to prevent inflation from spreading to other sectors of the economy by tightening monetary policy and channelling RMBs offshore. But these channels involve outbound direct investment (ODI), currency swaps, using the RMB for trade settlements for imported goods and issuing of RMB denominated bonds offshore.

FIGURE 6
CHINA'S OUTWARD FDI NET FLOWS 2002-2010



Source: 2010 Statistical Bulletin of China's Outward Foreign Direct Investment

Since 2005 (the most recent phase of RMB internationalization), China's ODI has increased dramatically from $5.5 billion in 2004 to $68.81billion in 2010. China's ODI ranked fifth among all economies in 2010, picking up around 5.62% of world ODI.

TABLE 3
RMB LOCAL CURRENCY SWAP ARRANGEMENTS

Effective Date	Country	RMB (Billion)
Dec 2008 (Renewed in Oct. 2011)	Republic of Korea	180
Jan 2009 (Renewed in Nov 2011)	Hong Kong	200
Feb 2009	Malaysia	80
March 2009	Belarus	20
March 2009	Indonesia	100
April 2009	Argentina	70
June 2010	Iceland	3.5
July 2010	Singapore	150
April 2011	Uzbekistan	0.7
April 2011	New Zealand	25
May 2011	Mongolia	5
July 2011	Kazakhstan	7
October 2011	Republic of Korea	360
November 2011	Hong Kong	400

Source: People's Bank of China

Before 2008, China's currency swap arrangements were expressed in US dollars. Starting in late 2008, China began to sign a series of bilateral currency swap agreements denominated in RMBs (See the above table). China had signed 12 currency swap agreements with a total swap volume of RMB841.2 billion by 2011. The currency swap agreements provide RMB liquidity offshore that can be used by overseas investors for trade settlements, as a store of value and as investment currency.

Since 2005, the Chinese authorities have approved the issue and trading of Panda bonds, an RMB denominated bond issued by qualified foreign issuers and sold in China. By 2011, Panda bonds to a value of around RMB60 billion had been issued. In July 2007, the Hong Kong financial market was allowed to issue an RMB denominated bond, called the Dim Sum bond. The number of Dim Sum bonds issued jumped from a total value of RMB10 billion in 2007 to RMB36 billion in 2010. In the first five months of 2011, a total of RMB28 billion was issued by 28 issuers including the World Bank, the Asian Development Bank and the International Finance Corporation (reported in The People's Daily online, June 2011). Since 2007, Dim Sum bonds totalling over RMB100 billions of have been issued by 55 issuers.

Opening up the use of the RMB requires the co-operation of both offshore and onshore banking services in order to maintain the clearing balance. The advantage of an offshore RMB centre is that, as the RMB goes international, the offshore centre can serve as a firewall to buffer against potential volatility in the market. Indeed, it is not only Chinese investors who are looking for investment opportunities, but also foreign investors who are seeking out RMB financial assets. Under the one country, two systems policy, Hong Kong, can maintain her own currency and linked exchange rate system. This places Hong Kong in a unique position to serve as the offshore RMB centre for China. As a well-developed international financial centre, the financial infrastructure in Hong Kong can provide services for trade settlements in RMBs, and offer a variety of RMB financial investment and wealth management services. These can include, for example, RMB Bond funds, non-delivery RMB forward, Structured RMB deposits, RMB-denominated IPOs and RMB insurance policies. Indeed Hong Kong was the first place outside Mainland China that was allowed to provide RMB banking services (since 2004) and, since 2007, to run the only RMB bond market. The building up of an RMB fund pool in Hong Kong has made dramatic progress in recent years. RMB deposits reached RMB609 billion in August 2011, about 10 times the level in 2009 (Source: HKMA, August 2011).

The build-up of RMB deposits in Hong Kong revealed the need for a channel to connect it to the

Chinese financial market. Recently, in September 2011, the Chinese authorities approved policies that would allow RMB Qualified Foreign Institutional Investors (RQFII) to invest in the securities markets in Mainland China, and the ETF (Exchange Trade Fund) of Hong Kong to be listed among the stocks in Mainland China. Opening this door for the RMB to "come back" to promote the development of China's financial market, and its integration with the global financial market, is an important step on the road to internationalization of the RMB.

However, the strategies for the "going out" and "coming back" of RMBs still have a long way to go. According to the quarterly review of the Bank for International Settlements (BIS), March 2011, over 60% of the RMB daily turnover is carried out in a strictly off-shore mode, that is, outside the Chinese financial market between two non-residents. Indeed most of the offshore transactions are carried out in Hong Kong. On-shore transactions represent about 39%, and the amount of on-shore/off-shore transactions is very small. (McCauley and Scatigna, 2011, p.72). This may be due to the controls on the RMB that pushes trading offshore into non-deliverable financial instruments, resulting in a high proportion of strictly offshore transactions (Mihaljek and Packer, 2010, p 54). It can be foreseen that achieving financial integration between China and the rest of the world is another stage in the internationalization of the RMB.

CONCLUSION

This paper shows that the RMB has great potential to be an international currency, but that the internationalization process needs to pass through three interactive stages. The first stage is to build close economic relations with regional and emerging countries through bilateral trade agreements. These agreements can encourage trading partners to use the RMB to settle cross-border trade. In order to convince its trading partners to use the RMB, China needs to transform itself into a consumption-led growth economy and provide channels for the RMB to circulate across borders since the capital account of China is only partially open. In a demand driven market, consumers normally have higher bargaining power concerning the use of the local currency to settle transactions. This paper argues, therefore, that the second stage will be the transformation of China's economy into a consumption-led growth model. With the current debt crisis, it is expected that the growth rate of western economies will be very slow. To maintain the growth of the Chinese economy, therefore, the growth engine needs to shift from being export-led to being consumption-led. However the transformation of the Chinese economy requires the liberalization of China's financial market. The lack of financial tools available to China households to help them to hedge against inflation has caused them to save more during times of economic crisis. However, the development of a financial market will need time to allow both regulators and investors to learn how to manage and survive in a complex financial market. One shortcut perhaps would be to allow the RMB to "go out", making use of Hong Kong as its offshore centre. Chinese investors could take advantage of the well-developed financial infrastructure and tools in Hong Kong to hedge against inflation. On the other side, foreign traders need a channel to get the RMBs back into China, so, as the offshore centre, Hong Kong can co-operate with the onshore banking services and thus help the RMBs to "go back". Alongside the development of this offshore RMB trading centre, there should also be a funding pool of RMBs built up offshore which could serve as a buffer to protect the RMB against harmful fluctuations. Thus the third stage would be the liberation of the financial market.

According to the historical pattern, the next five years should be the critical time for the internationalization of the RMB. Although at present the RMB is only partially open to the world, it is clear that the Chinese authorities would like to take further steps to promote its internationalization. It has to be admitted that at present the internationalization of the RMB is still in its infant stage, but China has always been capable of surprising the world, especially in economic development. It is possible that the RMB might be able to pass through the three stages and take a big step towards internationalization within the next five years.

REFERENCES

Bhattacharya S.K. and Bhattacharyay B.N. (2006). Free Trade Agreement between People's Republic of China and India: Likely Impact and Its Implications to Asian Economic Community. *Asian Development Bank (ADB) Institute Discussion Paper* No. 59.

Blanchard. O. J. and Francesco G. (2006). Rebalancing Growth in China: A Three-Handed Approach. *China and World Economy,* 14, (4), 1–20.

Chinn. M and Frankel J. (2005). Will the euro eventually surpass the dollar as leading international reserve currency? *NBER Working Paper,* No. 11510.

Finance Market (2011). China could surpass US and become world's no.1 economy, Aug

Genberg H. (2009). Currency internationalisation: analytical and policy issues. *Bank for international settlements (BIS. Asia research program*. *Research paper,* Aug.

Hong Kong Monetary Authority (HKMA). (2011). *Monetary Statistics* for August.

International Monetary Fund (IMF). *World Economic Outlook (WEO) Database,* October 2010.

International Monetary Fund (IMF). *World Economic Outlook (WEO) Database,* April 2011.

Kenen P. (1983). The role of the dollar as an international currency. *Group of Thirty Occasional Papers,* no 13. New York.

Kenen P. (2009). Currency internationalisation: an overview. *BIS Asia research program. Research paper,* Aug.

Kuijs L. (2006). How Will China's Saving-Investment Balance Evolve? *World Bank Policy Research Working Paper* 3958.

McCauley R. and Scatigna M. (2011). Foreign exchange trading in emerging currencies: more financial, more offshore. *Quarterly Review,* March, 67-75.

Mihaljek D. and Packer F. (2010). Derivatives in emerging markets. *Bank of International Settlements (BIS). Quarterly Review,* December, 43–58.

People's daily online. (2011). Cross-border yuan trade settlement may expand nationwide, March.

People's Daily online. (2011). Record RMB bond issued in HK in first 5 months: official, June.

People's Bank of China. (2009). Monetary policy report of the People's Bank of China (PBC), 3Q09.

World Trade 2010. Prospects for 2011. World Trade Organization (WTO), April. PRESS/628.

World Trade Organization (WTO). World trade press. 2010.

Yu Y.D. and Gao H.H. (2009). Internationalization of the Renminbi. *Bank for international settlements (BIS) Asia research program. Research paper*, Aug.

Zhu M. (2011). Emerging Challenges. Straight Talk. *Finance & Development. IMF,* June, (48) No. 2

The New Australian Personal Properties Security Act 2009 (Cth): An Overview of Business Impacts, Transitional Issues, and International Comparisons

Elizabeth McVicker
Metropolitan State University of Denver

For more than twenty years, Australian politicians and academics have been discussing federal securities legislation that would unify the more than 70 individual laws of the states and territories. Based on aspects of Article 9 of the UCC as well as Canadian and New Zealand law, the Australian Personal Properties Security Act 2009 (Cth) (the "PPSA"), which covers all transactions that have the economic effect of creating security, went into effect on January 30, 2012. This paper provides an overview of the business impacts of the PPSA, looks at the advantages of the new Act and suggests amendments for improvement.

INTRODUCTION

For more than 20 years, Australian politicians and academics have been discussing a kind of legislation that would unify the many different kinds of rules overseeing personal properties securities in the five states and two territories of the country. Arrangements for security over personal property in Australia have combined aspects of common law with statutory overlays, both at the state and federal level. In the past few years, the discussion about a new Australian federal law intensified; legislation was codified in 2009 and the new Australian Personal Properties Security Act of 2009 (Cth) (the "PPSA") went into effect on January 30, 2012 (http://www.ag.gov.au/pps). The new law is a federal law and will be in force throughout Australia, replacing more than 70 individual laws of the states and territories. The PPSA will cover all transactions that have the economic effect of creating security, as well as certain "deemed" security interests, including many leases. The main purpose of PPSA is to provide notice to prospective buyers regarding secured parties' rights in personal property (Young & Jones, 2011, p. 1). Under the new law, personal property is anything that can be owned, traded, or otherwise treated as property, except property that is land or related buildings and fixtures, water interests, and certain statutory licenses (Young & Jones, 2011, p.1).

Australia's Inspiration for the PPSA: U.S., Canadian and New Zealand law

PPSA draws upon Article 9 of the Uniform Commercial Code (UCC) in the United States as well as adaptations of Article 9 in Canada and in that country's provincial Personal Property Security Acts (Simmonds, 2002). However, the real impetus for Australian politicians to push forward with the new law was the efficacy created by the New Zealand Personal Properties Securities Act of 1999 (NZ), which took effect in 2002 (Hattaway, 2006). Hence, Australia will now join the United States, Canada and New Zealand with a comprehensive system for recognizing, registering, and enforcing security interests over personal property (East, 2012).

The New Zealand PPSA established a single procedure for the registration of security interests in personal property and created a centralized electronic register (http://www.ppsr.govt.nz/cms). The New Zealand Personal Property Securities Register is an electronic register available to the public 24 hours a day, 365 days a year, which provides online searching, registration and maintenance of financing statements. It is a database that individuals can check at any time to see their position vis a vis their personal property--what goods are secured and to what goods another creditor can possibly obtain a better right. Registering a security on the New Zealand Personal Properties Security Register costs only $3 (http://www.ppsr.govt.nz/cms). Both the Australian PPSA and the Australian PPS Register (PPSR), available as of January 30, 2012, are intended to mimic those of New Zealand and, thus, as emphasized by the Australian Attorney General's office, to harmonize Australian laws with New Zealand's in order to benefit and facilitate trans-Tasman business opportunities (http://www.ag.gov.au/pps).

Indeed, Australia and New Zealand are even considering a single PPSR as part of a broader trans-Tasman "harmonization programme" that is due to be completed by 2014 (Arthur & Foote, 2010). The development of a single register would allow any business or person doing business in both Australia and New Zealand to register only once in respect of trans-Tasman trade. The biggest problem facing the efficacy of the PPSA is failure to register; a single trans-Tasman PPSR would facilitate that learning curve (Arthur, Foote, 2010).

The law has worked well in New Zealand and the Australians decided to follow suit partly because New Zealand reported that the reforms codified in its new PPSA "resulted in increased certainty and confidence to the parties in commercial transactions where personal property is used as a security interest and clarity where competing security interest is an issue" (www.beehive.govt.nz/portfolio/attorney-general). The New Zealand Attorney General encouraged the Australians to harmonize their personal property security laws with those of New Zealand so that businesses would be operating under similar guidelines and operating procedures (http://www.beehive.govt.nz/portfolio/attorney-general). Likewise, such coordination of securities laws among Australia, Canada, and the United States will benefit any business conducting transactions within this international setting. Businesses that focus on credit management, financiers who operate in industries where goods and services are supplied without passing full ownership—such as manufacturing, retail, telecommunications, and transport—farmers, IT equipment suppliers, and software developers all will benefit from the new law as the centralized registration regime takes effect over the next 24 months of transition. A personal property security regime with cheap, easy online access will make doing business in Australia a smoother process.

The main case for the new PPSA is the goal of facilitating "cheaper, faster, easier, simpler and safer" transactions (Hattaway, 2006). As mentioned above, it incorporates some of the organizing ideas of Article 9 of the Uniform Commercial Code; specifically, the Australian PPSA constructs allow for functional treatment of secured transactions ("uniformity") and reasonable allowance for versatile design of such transactions ("flexibility"). The new law replaces the chaos of past secured transactions laws by providing for modernized, simplified, largely uniform, and much easier to apply rules for the creation, enforcement, and priority position of consensual security interests.

The Australian PPSA was to be launched and the PPSR available first in February, then May, then October 2011. The transitional issues, discussed below, that have arisen attest to why the Australian government took until the last moment—January 30, 2012-- to "go live" with the register. The Australian legislature would have had to amend the proposed Act if it had not launched by February 1, 2012 (PPSA, § 2) but that uncertainty has been replaced with an embrace of the new reality by attorneys, financial organizations, and international businesses. This author will suggest that the Australian government spend time and effort in improving self-help guidelines and tutorials for small businesses, both Australian and internationally, such that assistance from legal counsel is not necessary for individuals and small entities.

Because the world economy is based on credit—secured transactions keep the commercial world going--a basic understanding of the scope of the newly revised Article 9 of the UCC is crucial for any business executive in the United States. The new Australian PPSA and the New Zealand PPSA can help international businesses understand the terms and scope of Article 9 of the UCC as well. However, marked differences among the different security law regimes in the United States, Canada, New Zealand, and Australia continue to create confusion and uncertainty, specifically those parts of the laws that deal with fixtures, intellectual property, and retainment of title issues. Others have written analyses of these issues and have formulated suggested amendments to the new Australian PPSA which this paper will discuss and endorse (Bull, 2012).

Why Bother with Registering with the PPSA? Examples

Trade creditors, manufacturers, farmers, software developers, suppliers--anyone who enters into an arrangement involving a security or anyone who has an arrangement with a retention of title (ROT) clause--are advised to register with the PPSA in order to take priority ahead of a general security. The risks in not registering involve 1) becoming an unsecured creditor if the other party becomes insolvent; 2) losing priority of the security interest if another secured party gains priority by registering first; and 3) losing any right in the secured property because the secured property could be sold or leased to another party that would take the property free from the security interest (East, 2012).

Manufacturing and Supply Chain

For example, if a manufacturer of widgets, Widgets Ltd., provides widgets to Sam's Widgets-for-Sales Ltd., the manufacturer will register a security over the widgets that they supply. If Sam's has a line of credit with a bank, arranged many years ago, the bank will also have registered a general security over all of Sam's personal property (not over its real property or water rights) that Sam's owned at the time the line of credit was issued or has acquired since. If Sam's is unable to pay the bank for money owed on the line of credit, the bank will require that Sam's sell all its assets to pay the delinquent debt. Because Widgets Ltd. has a registered security over the widgets it supplied, the bank, or the bankruptcy trustee, cannot touch those widgets (Hattaway, 2006).

Credit managers are accustomed to the previous PPSA system based on retention of title (ROT). Widgets Ltd. most likely has good ROT clauses in its financing agreements and may feel comfortable that these contractual clauses provide protection because they make clear that the goods belong to the owner/manufacturer until the goods are paid for, and if the party to whom they were supplied defaults, the goods can be repossessed. Because ROTs are a security interest under the new PPSA, they must be registered with the PPSR so that Widgets Ltd. can take priority over a general security such as that held by the bank.

Banking and Finance

Lending transactions over property that belongs to an Australian entity or that is located in Australia also fall under the new PPSA registration requirements. Prior to January 30, 2012, a company or registered Australian body registered its security interests under the Corporations Act of 2001 (Cth) (Corporations Act) and also registered with various states under state-based legislation. Similarly, individuals registered security interests related to lending transactions with state registers under state-based legislation. These registrations varied depending on the nature of the assets tied to the lending. The new PPSA registration system supersedes the charge registration provisions previously in operation under the Corporations Act as were most state-based security registers, except lending transactions tied to land, water rights, and mining permits or leases. Security interests in land, tied to any lending transaction, continue to be registered under the applicable state or territory land registration system, parallel to the legal system in the United States and echoing Article 9 (Holland, 2012; PPSA §§ 150-178). Banks have also had to change the language in their loan security documents to reflect "general security agreements" and to embrace the new PPSA terminology, reviewed below.

However, certain interests relevant to the banking and finance industry are not embraced by the PPSA system, including an interest in collateral which is chattel paper, an investment instrument, a monetary obligation, or a negotiable instrument (Young & Jones, 2011, pp. 1-3).

Equipment Leases

Certain contractual arrangements are considered security interests under the PPSA. For example, a lease or bailment of goods for a term of more than one year or an indefinite period of time or for serial numbered goods, such as motor vehicles, watercraft, or aircraft, for a term of 90 days or more or for an indefinite period of time all are security interest in personal property under the PPSA and must be registered. If a customer retains uninterrupted possession of goods for any of these time periods, a personal property security lease arises. Thus, a lessor or bailor of goods with a personal property security lease needs to register on the PPSR; once that security interest lease is registered, the owner of the goods will have a super-priority interest in the goods (Reed, 2012).

Agribusiness

Tractors, crops, livestock, wool, plant breeders' rights—all farm-related personal property--are covered under the PPSA; hence, lenders, farmers, and ranchers need to be aware of the new single, national scheme that regulates interests relative to personal property that is given as security for payment or other obligations. Primary producers as well as suppliers will want to ensure to establish their security interests according to the new PPSR requirements. Some transactions that previously would not have been considered a security, such as a lease of a tractor, will now need to be registered with the PPSR. The lessor that owns that tractor will want to register its security in the tractor and train itself out of the old way of thinking: just because the lessor owns the tractor does not give it security if the farmer becomes insolvent. Likewise, a primary producer of a crop that has been accustomed to selling its goods on ROT terms—where the title does not pass until full payment is made—must register with the new PPSR. And farmers who supply their produce for processing who are in a bailment situation also now must be cognizant of the need to register their security interest with the PPSR. The new PPSA states that supplying goods on bailment terms for more than 90 days is a security interest and must be registered to retain a priority interest in case of insolvency (Dwyer, 2012).

The tractor lease and the ROT security interest are considered Purchase Money Security Interests (PMSI), discussed in detail below, and when registered will grant a super-priority over a non-PMSI perfected security interest. In fact, the new PPSA defines an "agri-PMSI" and carves out special rules for agribusiness (PPSA, § 62). If a farmer gives a security interest over his crops while they are growing, or within six months before planting, for example, to a fertilizer supplier, the fertilizer supplier's perfected security interest, registered with the PPSR, will be considered a perfected security interest in those crops and will take priority over any other security interest. The same rule applies to livestock; if a rancher, for example, borrows money to buy food for his cattle, the supplier of the food has a priority interest over all others. Again, a prior mortgage over the land that includes the crops or livestock will not be affected (Dwyer, 2012). The PPSA includes specific rules that apply to crops and livestock when a party is attempting to enforce its security interest by, for example, entering on land when the crops are growing. These rules are in step with the established rules of grantor's rights (Dwyer, 2012).

Commingled property, such as grain stored in silos, also commands special attention from the PPSA, which details how multiple holders of security interests hold priority (Dwyer, 2012). And as discussed above, farmers and ranchers will notice new loan security documents from their banks; no longer will they see "fixed and floating charges" over all assets; instead, the "general security agreement" will replace this language and the new PPSA language will be in place: the "grantor" grants a "security interest" over the "collateral" to the "secured property." This language echoes that of the language of Article 9 and is reviewed below.

Information Technology

The new PPSA system will affect financing arrangements of information technology (IT) businesses as well as arrangements for the supply of goods and services by and to such businesses (PPSA, §§ 105, 106). An IT company that supplies computer hardware and IT equipment, or leases equipment, or develops software, for example, has been accustomed to including ROT clauses in its contracts. In a long-term lease or one in which the customer has not paid in full for the equipment, the IT company retains title in the relevant property and thus has no need to register these arrangements in order to retain priority of interests over others with competing claims. Now, under the new PPSA system, the owner of that equipment is treated as a secured creditor and thus must register those interests with the PPSR. Such companies will want to redraft their contractual terms to make sure to include provisions that clarify the registration and enforcement of security interests. An IT business that receives a supply of goods must also understand that it may be subject to the registration of security interests against it by its suppliers. For example, a company supplies IT equipment to a customer on terms that reserve title in that equipment until payment is made in full; that IT company now needs to have registered the security interest in order to be able to reclaim that equipment if the customer becomes insolvent and is placed in liquidation, or it will lose its right to the equipment to another who holds a registered security over the assets of the customer.

Likewise, an IT company that develops custom-built software must be aware of the fact that under the PPSA certain intellectual property rights and transferable licenses, such as a license to use a patent or copyright, are "personal property" and constitute a security interest. In the case of a company that custom-builds software based on a financed situation, where the customer will not own the software until it has paid the developer in full, the IT developer has created an ROT situation, thus has created a security interest under the PPSA, and therefore needs to register that interest to retain priority in ownership in case of insolvency of the customer. However, a company that has a non-transferable software program license operates under a straight license situation and would not have to be concerned with the PPSA system (Hoyle, T. 2012; PPSA §§ 105, 106).

Fixtures

The PPSA has not helped clarify the confusing area of the application of a multitude of state and territorial laws that arise when there is a real property mortgagee and a fixture financier that both claim rights in the same fixture. The common law holds that a fixture, or chattel—say, the seats in an auditorium or the plumbing fixtures in a hotel--loses its identity upon becoming affixed to land and therefore becomes subject to any interest in the land (North Shore Gas Co Ltd v Cmr of Stamp Duties 1940; Lees & leech Pty Ltd v Cmr of Taxation, 1997, as examples; Bull, 2012). A supplier of fixtures, therefore, finds itself in a position where it is impossible to protect its interests in properties affixed to land. Section 36 of the Canadian Act includes specific priority rules that govern security interests in fixtures and competing interests in land (Personal Property Security Act, RSBC 1996, Section 36, c 359). The fixture provisions of the Canadian Act balance the interests of mortgagees and fixture financiers by changing the common law position that a mortgagee will have the best interest in any fixtures on the land. The Canadian Act defines fixtures as "not including building materials" and leaves to the common law to sort out whether goods, other than building materials, have become fixtures (PPSA, RSBC 1996, Section 2(1)(s); Section 2(1)(e)(iii) and (iv)).

When the Australian PPSA was being drafted, a fixture provision similar to the Canadian Act was intended. At the last moment, however, the drafters followed the lead of New Zealand, presumably in an effort to harmonize trans-Tasman business transactions and registrations, and did not include any provisions for fixtures in the PPSA. Thus, Australian suppliers of fixtures or fixture financiers still have no easy way to protect their security position in their goods (chattels) because state land-title legislation does not allow them any priority over the land mortgagee. Several commentaries have urged Australian legislators to consider an early amendment to the new PPSA in order to adopt an amended Canadian regime based on the benefits that it provides (Bull, 2012). A party who searches the title for land that includes affixed goods would want to be aware of the existence of the fixture and any related security interest. In Canada, such a party would see the registered fixtures notice on the title. One of the objectives of the new Australian PPSA was to provide transparency with a single national law and a single register that would apply to all personal property interests. However, the exclusion of land and fixtures from the scope of the PPSA leaves the determination of whether or not chattels supplied by fixture financiers to the reign of confusing and contradictory common law in the various states and territories (Bull, 2012).

Article 9 of the UCC of the United States: Basics of the Law of Secured Transactions

Article 9 of the UCC governs secured transactions in personal property. The Australian PPSA, like Article 9, applies only to personal property, not to land, water, mining leases, and certain statutory licenses (Young, Jones, 2011.) The world economy is based on credit, and secured transactions keep the commercial world going. The quantity of disputes in the United States is an indicator of the impact of Article 9 of the UCC: half of all UCC lawsuits involve Article 9 (www.law.cornell.edu.ucc.9/ article9.htm).

The basic definitions of pivotal terms in Article of 9 of the UCC are common to the Australian PPSA as well. These common terms include the following:

- “Fixtures,” goods that have become attached to real estate;
- “Security interest,” an interest in personal property or fixtures that secures the performance of an obligation;
- “Secured party,” a person or company that holds a security interest;
- “Collateral,” property that is subject to a security interest;
- “Debtor,” a person who has original ownership interest in the collateral;
- “Obligor,” a person who must repay money or perform some other task to satisfy a debt;
- “Security agreement,” a contract in which the debtor gives a security interest to the secured party;
- “Default,” the failure of a debtor to pay money due on a loan or credit purchase;
- “Repossession,” which occurs when the secured party takes back collateral because the debtor has defaulted;
- “Perfection,” a series of steps that the secured party must take to protect its rights in the collateral against people other than the debtor;
- “Financing statement,” a document that the secured party files to give the general public notice that it has a secured interest in the collateral;
- “Record,” information written on paper or stored in an electronic or other medium;
- “Authenticate,” signing a document or using any symbol or encryption method that identifies the person and clearly indicates he or she is adopting the record as his or her own; and
- “Purchase Money Security Interest (PMSI),” a security interest that has a super-priority over other security interests in certain situations. A PMSI is attached to specific collateral that is being leased, purchased, or supplied on consignment or subject to retention of title (ROT) and extends to funds that have been lent to a grantor for the purpose of enabling the grantor to acquire the collateral (UCC Section 9-100, et. seq.; PPSA, § 1; Young & Jones, 2011, p. 1).

PMSI and Super Priority

Special priority rules arise in relation to PMSIs. The following interests are PMSIs:

- A security interest taken over collateral to the extent that the security interest secures all or part of the collateral’s purchase price; for example, in retention of title situations (PPSA, § 62);
- A security interest taken over collateral for the purpose of enabling the grantor to acquire rights in the collateral, to the extent that the value is applied to acquire those rights; for example, in a purchaser of a farmer’s crop for the purpose of producing a food product (PPSA, § 62);
- An interest of a lessor or bailor of goods under a PPS lease; for example, the lessor of the tractor to a farmer or the farmer bailing his livestock to a processing plant (PPSA, § 62); and
- An interest of a consignor who delivers goods to a consignee under commercial consignment (PPSA, § 14).

Control and Possession

However, even a PMSI does not have priority over a party that has “control and possession.” The Australian PPSA is similar to the revised Article 9 of the UCC in recognizing that the secured party has either “control or possession.” For deposit accounts, electronic chattel paper, and certain other collateral, the security interest attaches if the secured party has “control” (UCC §§ 9-104, 9-105, 9-106, 9-107; PPSA, § 4). “Control” means that the secured party has certain exclusive rights to dispose of the collateral. The Australian PPSA has adopted the same specific definitions as the revised Article 9 of the UCC (PPSA, §§ 24, 62, 153).

Both the PPSA and Article 9 allow for control over deposit accounts in a bank. The secured party has control if it is itself the bank holding the deposit or if the debtor has authorized the bank to dispose of funds according to the secured party's instructions (UCC §§ 9-104; PPSA, § 62). A secured party has control of electronic chattel paper when it possesses the only authoritative copy of it, and the record(s) designate the secured party as the assignee (UCC §§ 9-105; PPSA, § 62). This means that the parties have agreed on an electronic method to verify the uniqueness of the record, so that any copies of the electronic original are clearly recognizable as reproductions. UCC §§ 9-106 and §§ 9-107 specify analogous methods of controlling investment properties and letter-of-credit rights, and, again, the Australian PPSA follows suit (PPSA, § 153).

Both the UCC and the Australian PPSA recognize that for most other forms of collateral, including goods, securities, and most other items, a security interest attaches if the secured party has "possession"; if a person loans a neighbor money and the neighbor gives the lender a Picasso painting as collateral, the lender has an attached security interest in the painting once it is in his or her possession. A writing to authenticate the transaction would be wise in both countries, but is not legally required. (PPSA, § 131).

The Australian Personal Property Securities National Register (PPSR): Comparison of Aspects

The revised Article 9 of the UCC has been adopted by all 50 states; the actual statutory versions of Article 9 that have been adopted state by state vary and each state has designated what state agency is the formal register office. In Colorado, for example, the office of the Secretary of State is the register. One big change in the revision of Article 9 is the acknowledgement of e-commerce; Article 9 is medium-neutral in that it permits security interests to be created and filed electronically or in any other form.

Australia followed the lead of New Zealand in providing for a national register of security interests over personal property. Holders of security interests "perfect" their security interests by registering a financing statement on the Personal Property Securities Register (PPSR). The PPSR is publicly searchable and contains basic details about the security interests, who they are held by, and who and what they are held over (PPSA, §§ 6, 152, 153). Security interests that are perfected take priority over other security interests subject to the specific priority rules in the PPSA (PPSA, § 153).

The Australian PPSR, therefore, is a national register, like that created by the New Zealand PPSA. The New Zealand PPSA, which rolled out in 2000, gives increased certainty and confidence to the parties in commercial transactions where personal property is used as a security interest and clarity where competing security interests are an issue (www.beehive.govt.nz/portfolio/attorney-general). It will be available 24/7, 365 days a year; registering a security interest in New Zealand costs $3 and the Australians will price their register similarly (http://www.ag.gov.au/pps). The PPSR will be operated by the Insolvency and Trustee Service Australia (PPSA, § 4).

The PPSR will replace 40+ existing registers and most of these will be migrated to the PPSR. Because the new PPSR has replaced registers for company charges, bills of sale, ship mortgages, motor vehicle securities, crop liens, stock mortgages, intellectual property licenses, and other securities affecting tangible and intangible personal property, many businesses must learn new habits of securing their interests in their property.

For example, the Australian Securities and Investments Commission (ASIC) Register of Charges has closed, accepting or processing charges up to January 27, 2012. Before the PPSA came into effect, an Australian corporate entity would register its charges either by its Australian Company Number (ACN) or, in the absence of an ACN, would register using the Australian Business Number (ABN). Although the intention was that all currently registered charges with the ASIC were to be transferred to the PPSR using the ACN, approximately 25,000 registrations did not migrate correctly, using the ABN instead (East, 2012). As a result, searching the PPSR using only the ACN does not provide an accurate result as to all the security interests registered against the relevant grantor (East, 2012). The Australian Bankers' Association has collaborated with the Australian Finance Conference to draft industry standard forms to assist with the new registration process and to amend registrations, and a plethora of Australian attorneys are making sure that businesses know that there is counsel available (Walsh & Kim, 2012). Indeed, the PPSA may prove to be an attorney's perpetual job act as businesses grapple with the changes and new requirements.

Similar to the migration from the ASIC to the PPSA, prior to January 30, 2012, security interests provided by a company or an Australian registered body were required to be registered under the Corporations Act 2001 (Cth) (Corporations Act) and, depending upon the nature of the assets of the security, would have required registration under various state-based legislation. Likewise, if a natural person wanted to register a security, other various state-based legislation came into play.

The Australian PPSA and Intellectual Property Rights

As in New Zealand and the United States, the new Australian PPSA directly impacts transactions involving intellectual property (IP). Anyone buying, selling, or licensing intellectual property assets in Australia or offering them as security, needs to know the details of the new PPSA. Patents, trademarks, designs, copyrights, and IP licenses are included. However, trade secrets or unregistered trademark rights ("know-how") are not included (PPSA, § 105). The single national register provides a means for perfecting the security interests and will replace the various IP registers throughout Australia.

In the past, security interests relating to IP were often recorded on the various IP registers; different registers exist for patents, trademarks and designs among the different states and territories. Recording an interest on these registers did not necessarily have the effect of defeating competing interests, such as a subsequent bona fide purchaser of the IP without notice of the interest (Simmonds, 2011). The new national register will allow priority holders of IP rights to defeat other third-party claims.

Some examples of relevant transactions involving intellectual property include purchase, sale, and loan transactions; partial assignment of copyright that involves an assignment as means of securing payment; transactions of physical assets closely related to IP rights such as equipment that contains embedded software or is covered by patents; patented pharmaceuticals; and the transfer of IP licenses (Simmonds, 2011). The new Australian PPSA provides that when a security interest is granted over an IP license, and the IP is sold to another person or entity, if the license is in place, the security interest will bind the new owner. If physical assets are being used as security, it is important, therefore, to confirm specifically whether or not the underlying IP rights are also being secured before registering the security interest (Simmonds, 2011). However, there is no intention to migrate intellectual property registers for trademarks, designs, and patents; the holders of these intellectual property rights interests will need to register them in the new PPSR and maintain them in the other registers as well (Simmonds, 2011).

Transition to the New PPSA

The new Australian PPSA was to have been rolled out by October 2011, then by February 1, 2012, and finally officially became available on January 30, 2012. The migration time for existing registered security interests will extend for a 24-month period until January 30, 2014 (http://www.ag.gov.au/pps). If one has charge over assets of an Australian company that is registered under the Corporations Act of Australia, they will be automatically transferred to the new PPSA (Hattaway, 2010). The security interests over IP that are registered with the various IP registers will need to be re-registered with the PPSA and will have to be refreshed every seven years (http://www.ag.gov.au/pps).

For a business or person doing business in Australia, it will be important that PPSA provisions are included in all documents. Developing a checklist of documents that require registration would be a smart move for businesses engaged in trans-Tasman transactions. Indeed, the key words will be: Attach, perfect, register!

Perfection by Registration: Benefits

Perfection of a security interest by registration has true benefits. Registration will define the priority status of the security interest relative to other security interests in the collateral. Registration will ensure that the security interest survives the bankruptcy or insolvency of a grantor. A perfected security interest will take priority over an unperfected security interest. The priority between two or more perfected security interests will be determined by which party has the earlier perfected security interests. Priority between two or more unperfected security interests will go to the one that attaches first. This parallels Article 9 of the UCC as well as the New Zealand PPSA.

A recent example provides a good illustration of why it is important to comply with the new PPSA regulations. An Australian company called WOW Sight and Sound is one of the first receiverships since January 30, 2012. Many large suppliers of WOW have been unable to reclaim goods supplied to WOW that were initially supplied on retention of title terms. WOW's receivers have only recognized ROT arrangements that were registered on the PPSR, and all other suppliers are considered unsecured creditors of the company and have been left with no recourse (Bull, 2012). WOW's receivers liquidated all stock and distributed the proceeds only to WOW's secured creditors and suppliers who had registered with the PPSA. The transitional provisions of the PPSA protect unregistered retention of title and consignment suppliers and leased goods for a 24-month transitional period, until 2014; however, these provisions do not protect arrangements entered on or after January 30, 2012 (Bull, 2012).

SUGGESTIONS: FIXTURE AMENDMENTS AND ONLINE SELF HELP GUILDELINES

The drafters of the new PPSA intended that the new regime would provide commercial certainty, fairness and justice in all areas involving personal property and secured creditors. However, as noted above, the choice to omit any provisions for fixtures does not further the purpose of providing commercial certainty. As it stands, a prior mortgagee will have priority over a subsequent registered fixture financier, which means that such secured creditors may be reluctant to finance the kind of property that will become fixtures on real property because they have no assurance of protecting their security interest in that property. One commentator, Amanda Bull of Thynne & Macartney of Brisbane, Australia, makes sound suggestions for early amendments to the PPSA to address the issue of fixtures, based on the problems that even the Canadian regime faces (Bull, 2012). Among her suggestions, the following are the best steps for the Australian drafters to adopt to provide a methodology for determining disputes between mortgagees of real property and fixture financiers: 1) The amendments should require that fixture financier's register their security interest on both the PPSR and the relevant land titles register to gain priority over a party that has an interest in the land; and 2) The amendments should provide that the land title system would prevail over the PPSA in order to resolve disputes over priority between a fixture financier and other registered encumbrances on the land titles register. Hence, the registrars of the relevant state-based land titles registers must also acknowledge a notation on titles for fixtures.

As Australian attorneys prepare to assist large and small businesses from around the globe to navigate the new PPSA regime, a continually upgraded, well maintained, robust "self-help" guide on the register website, coupled with a 24-hour customer service staff, would further the purpose of the drafters to provide a fast, efficient, and transparent system for international businesses and individuals. The Australian PPSA and PPSR could mimic any of the multitude of U.S. state and federal agency websites that are designed to assist individuals, businesses, and attorneys in complying with statutory regulations while furthering commercial endeavors.

CONCLUSION

The business and legal communities of Australia, New Zealand, Canada, and the United States, as well as global enterprises that do business in Australia, anticipate that the new PPSA will provide greater transparency; will create consistency and clarity when it comes to intellectual property rights used as secured interests; and will make transactions cheaper, faster, easier, simpler, and safer. Uniformity of secured transactions will reach across Australia and across to New Zealand. A true sign of success will be to note a scarcity of case law developing over secured interests and collateral in the years to come, and to hear reports of the ease of understanding the system and registering with the PPSR from businesses around the world that have personal property interests in Australia.

REFERENCES

Arthur, M., Foote, H., Tunna, J., & Yarnell, M. (2010, September 20). The New Australian PPSA [Commentary]. *Mondaq Business Briefing*. Retrieved June 8, 2012 from http://www.mondaq.com/NewZealand/article.asp?articleid=108904

Australian Government Attorney-General Department Website for Personal Property Security, Retrieved October 20, 2011 from http://www.ag.gov.au/pps

Australian National Affairs Website, Retrieved October 20, 2011 from http://www.theaustralian.com.au/national-affairs

Australian Personal Properties Securities Register Website, Retrieved June 20, 2012 from http://www.ppsr.govt.nz/cms

Bull, A. (2011, August 31). The PPSA priority rules: lessons from abroad [Commentary]. *Mondaq*. Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

Bull, A. (2012, April 18). WOW! How did that happen?-An early lesson in PPSA Compliance [Commentary]. *Mondaq Business Briefing.* Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

Bull, A. (2012, April 18). Australia: fixtures and the Personal Properties Act 2009 (Cth)-maintaining the status quo [Commentary]. *Mondaq Business Briefing.* Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

Bull, A. (2012, April 23). Fixtures and the Personal Property Securities Act 2009 (Cth)-fuzzy logic? [Commentary]. *Mondaq Business Briefing.* Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

Bull, A. (2012, April 23). Australia: PPSA and fixtures-can the problem be fixed? [Commentary]. *Mondaq Business Briefing.* Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

Bull, A. (2012, May 5). Australia: Saying goodbye to ASIC and hello to the PPSR [Commentary]. *Mondaq Business Briefing.* Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

Canadian Personal Properties Securities Act, Personal Property Security Act, RSBC 1996, Retrieved June 20, 2012 from http://www.justice.gov.sk.ca/Personal-Property-Security-Act-1993

Cullen, P. & Pinti, D. (2011, January 30). Australia: How the Personal Property Securities Act will affect Australian businesses [Commentary]. *Mondaq Business Briefing.* Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

Dwyer, P. (2012, June 2). Australia: The new agribusiness challenge-securing property under the PPSA [Commentary]. *Monda Business Briefing.* Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

East, D., Thistlewood, H., & Faludi, P. (2012, February 4). Australia: Australian Personal Property Securities Act [Commentary]. *Mondaq Business Briefing.* Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

East, D. (2012, March 20). Personal Property Securities Act 2009 (Cth) (PPSA)-Up and running smoothly, or is it? [Commentary]. *Mondaq.* Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

Hattaway, P. (2006, July). PPSA-why Australia will copy the NZ PPSA. *New Zealand Mercantile Gazette.* Retrieved October 15, 2011 from http://www.hattaways.com/articles/view/50.

Holland, T. (2012, May 1). Doing business in Australia-banking and Finance [Commentary]. *Mondaq*. Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

Hoyle, T. (2012, March 31). The Australian PPSA and intellectual property [Commentary]. *Mondaq*. Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

New Zealand Attorney-General Department Website, Retrieved October 20, 2011 from http://www.beehive.govt.nz/portfolio/attorney-general

New Zealand Personal Property Securities Register Website, Retrieved October 20, 2011 from http://www.ppsr.govt.nz/cms

Reed, M. (2012, May 19). A practical look at what the Personal Property Securities Register means for companies [Commentary]. *Modaq.* Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

Simmonds, R. (2002). The PPSA cometh to Australia. An introduction to the current state of play. *ELaw-Murdoch University Electronic Journal of Law, Vol. 9*. (No. 3). Retrieved October 15, 2011 from www. murdock_journal.html

UCC Article 9, §§ 9-100, et. seq., Retrieved October 20, 2011 from http://www.law.cornell.edu/ucc/9

Walsh, A. & Kim, B. (2012, March 14). Australia: PPSA: let's be friends [Commentary]. *Mondaq Business Briefing.* Retrieved June 8, 2012 from http:0-www.lexisnexis.com.skyline.ucdenver.edu

Young, S. & Jones, D. (2011, July 15). An overview of the Personal Properties Securities Act 2009 (Cth). [Commentary sent as personal correspondence to author]. Baker Jones, Lawyers. Brisbane, Australia. http://www.bakerjones.com.au/legals.htm

Gravitational Force of Community Events: A New Method of Evaluating Value of Local Events

Nathanael L. Adams
Cardinal Stritch University

Lynn L. Adams
Utah Valley University

The "Gravitational Force" model is used to measure how effectively local events attract participants and visitors from a distance. The study shows how to quantify the economic effect of an event on local tax base and the entire community. This model can be used to assess different kinds of events in relationship to each other by taking into account how far out an event tends to attract participants and to what frequency. This is done by using packages available to R and a new set of ratios based on the number and duration of hotel occupants.

INTRODUCTION

In the wake of the economic turn down after 2008, municipal, county, and state governments in the United States and elsewhere in the world have struggled with reduced tax revenues. Discretionary funds for these government bodies have been very tight and so a need exists to carefully evaluate the best way to spend public monies. Since some public needs are so critical, such as public safety, utilities and the like, that the main cuts in many budgets have been in such areas as community events and other budget items that are seen as less critical. Since community events are on the "chopping block" in so many cases the authors of this study thought that a methodology to evaluate the economic value of events would be of great worth to many governing bodies.

One important measure of any community event is how far away people are drawn to an event. If people come to an event from a distance that is not within a comfortable distance to travel within a day they will tend to stay at a motel, thus greatly increasing the potential economic impact of the event. Both of the authors of this article grew up in a small community (Heber, Utah) that is close to the heavily populated Wasatch Front (Salt Lake City, Utah). Many of the local events and attractions in the Heber Valley draw heavily from the Wasatch Front and the result is that the economic impact outside the money paid to the particular attraction is minimal, usually only consisting of some food purchases and perhaps some gas for their vehicle. However, if a visitor stays longer than a day the amount of money spent in the local economy greatly increases as that person spends on such things as motel/hotel accommodations, extra meals, extra shopping, rental cars (see Appendix C), one important measure of any event is how far away on average an event attracts participants. This study develops a methodology to measure the attraction (gravity) of events and then suggests a way to incorporate that knowledge into a decision making process.

To test the methodology that the authors have been working with, two events in Wasatch County were chosen. The first was the Heber Valley Railroad (HVRR), which had already been the subject of a marketing study by the authors (Adams and Adams, 2006) and the second was a specific event at Soldier Hollow Ski Resort (SoHo), a Junior Olympics cross country ski event held on January 28, 2011. The Heber Valley Railroad evaluation was from a survey conducted based on their entire customer list, while the Soldier Hollow event was a weeklong race for juniors.

PROBLEM

The once flourishing US economy has sputtered, leaving municipalities struggling to decide how to spend an ever-smaller pool of money. This study does not focus on debt reduction, or future investments. Instead it tries to address a question about current and past community events and their potential to bring in revenue for the community. To put the problem explicitly, what events should continue to get money and what events should not?

What makes this study unique is the use of "gravity" or how far out an event attracts participants, as a way of measuring the importance and potential profits for the community. Gravity can be defined as the "attraction" force between two objects (Halladay and Resnick, 1974) and can be seen every day as objects fall to the ground. Using a roughly similar definition the analysis looks at the "gravitational" pull of an event to determine potential value. What makes this analysis different from the force that keeps the celestial bodies in perpetual motion is gravity for any event is unique and different from other events, making event gravity a variable, which can change over time, and not a constant. Instead of the attraction that exists between two masses, individual events or attractions have a unique attraction for participants. The two factors affecting the gravitational pull of an event are the number of people attending and the distance traveled to get there. Using distance and number of attendants, municipalities can understand which events draw from a larger area and thus to put extra funding into.

Background

The idea for this article came from a speaker at Pepperdine University, who had the idea of trying to show the gravitational pull of particular cities and events. At the time it was a theoretical idea and was an aside given during a talk. Unfortunately the authors do not remember who that person was, but the seed was planted and the idea grew. After about six years of thought the idea was resurrected with a blog about creating maps using the great circle route between points and finding the distances (Lamigueiro, 2011).

What the blog showed was how to take data like cities, longitude and latitude, then using R to make a graph of the data. The example on the blog was the different flights of American Airlines and the frequency of the route (Lamigueiro, 2011). The idea of creating an equation is one thing, but the visual display of showing how dramatic the number of people coming and going was also needed. R allowed the authors the ability to show graphically and numerically how much gravity an event has. This idea coupled with the current economic situation where many municipalities are asking themselves how to spend less and less, while maintaining and supporting profitable events. To this end, a series of quantitative evaluations and graphs were created to explore the gravitational draw of two very different community draws (see FIGURES 1-10).

MATERIALS AND METHODS

This materials and methods section is broken into three major parts; the first is a discussion of the assumptions and limitations of the latitude and longitude method of determining distance. The R section, which then follows describes the assumptions, tests and results in the creation of the code for the R program developed for the analysis. The third section describes how the data derived in the R program was cleaned up.

Latitude and Longitude Assumptions & Limitations

The model hinges upon deciding on a reasonable choice of what constitutes a local visitor versus the "out-of-towner." Additionally the number of hours and distance traveled dividing these two groups of visitors turned out to be a challenging question. For example on a flat plane the distance from point A to point B is simple. In the complex highway system where there might not be a direct route due to rivers, lakes, mountains, canyons and other natural obstacles. Theoretically the ideal solution would be to get the address of every visitor then get a map with the driving time and distance from MapQuest.

Three major problems exist with the MapQuest solution, first the programming needed to get all of that information would make the model bulky and difficult to use. Second is the problem of getting the address of every visitor to an event. In the hyper-privacy sensitive world people are not willing to give out their address to a stranger. Additionally, collecting and aggregating such information is difficult even for technology savvy municipalities. The third problem is what if the visitor is flying? This complication makes the analysis even more problematic. One solution is to use city names, states and zip code to find the latitude and longitude coordinates and then ignore both terrain and mode of transportation.

Latitude and longitude coordinates take minimal information, city, state, country or zip code; all of which people are more willing to give. Ignorring geographic features removes all the natural barriers to travel by using 'as-the-crow-flies' distances, giving the absolute minimal distance to travel. Using the minimal distance traveled consistently the lowest gravity weight can be given to each visitor and each event; and will be consistent throughout different analysis. Deciding upon using the latitude and longitude method led to the question of which distance equation to use in R.

R-Statistical Program

R is an open source statistical program used for a wide range of statistical applications and can be found at www.r-cran.org (R Development, 2011). Because R is open source contributors from all branches of academia can contribute packages, or additional commands and data to the base program. The two packages used for this analysis are the Geosphere (Hijmans et al., 2011) and Maps (Becker, et al., 2011) packages. The Maps package includes the maps needed to graph the data and a database of world cities with a population greater than 40,000. The Maps database of cities was used to generate a simulation where the different formulas for distance were measured and tested for speed and accuracy.

The formulas used to determine the distance between the two objects are found in the Geosphere package and include Haversine, Vincenty sphere and Vincenty elliptical. Both the Haversine and Vincenty sphere formula assumes a spherical earth with a radius of 6,378,137 meters using a great-circle-distance assuming no terrain obstacles, mountains, rivers, (Hijmans et al., 2011). The third formula is the Vincenty elliptical formula, which assumes the earth is elliptical, while utilizing the great-circle-distance for distance measurements. The question for the researchers was which formula to use?

To determine which formula to use a test was created to determine the accuracy of each formula and the speed for each one. The Maps database of 1,005 United States cities was used with a starting point of New York and then each sum distance was found using each formula and timed. The time is the processor time using an AMD 64×2.1G dual processor, with 4 Gig of RAM, running Mint10 Linux in RStudio; times will vary based on the hardware, number of process running in background, OS and other factors. The data was converted to miles during the summing process.

From the results the Haversine and Vincenty sphere equations are exactly the same both in distance and processing time. The Vincenty ellipsoid shows a significantly more miles than the other two and the processing time is double the time as the others (see Table 1). For 1,005 data points the extra second is worth the extra precision as the average distance error between the Haversine and the Vincenty ellipsoid is 1.08 miles per data point, meaning the sphere formulas are on average 1 mile short of the more accurate ellipsoid formula. The formula used then is the Vincenty ellipsoid formula for the distance measurements. For additional information see appendix A for the R code used for the test.

TABLE 1
RESULTS OF FORMULA TEST

	Sum distance	Processor time (sec)
Haversine	2,327,309,913	1.35
Vincenty. Sphere	2,327,309,913	1.35
Vincenty. Ellipsoid	2,329,065,310	2.51

The second group of code found in appendix B is the code used to generate the analysis for each of the organizations, the Heber Valley Railroad (HVRR) and Soldier Hollow (SoHo). Each set of code is broken into three major parts; the first portions of the analysis include descriptive statistics such as mean, mode, median, standard deviation and Pearson's skewness. The reason Pearson skewness is used is because of the simplicity in understanding what it means. The Pearson skewness ranges from -3 to 3, where -3 is negatively skewed, 3 are positively skewed and 0 is symmetrical. There are other methods of determining the symmetry of a distribution, but the assumption is that those who will be making the decisions will not understand nor appreciate complex formulas when a simple one is available.

The second part for the analysis code is the exploratory graphs showing important information for each organization. These are a combination of frequency tables and histograms to visually describe the data presented (for example see FIGURE 1). The distance histogram and maps use the Vincenty ellipsoid formula to maximize accuracy and to be consistent in the analysis. The final part of the code is the code needed to create the various maps for the analysis of distance.

Data Clean Up

The data was cleaned up and zip codes were used as the primary means of finding the longitude and latitude for each point. The zip code offers the advantage of being more precise. Major cities have more than one zip code within them by using the zip codes a more precise set of distances can be found. For the HVRR zip codes were provided and so this method was used. For the SoHo data did not have the zip codes so the generalized one city, one zip code, one latitude and longitude was used; knowing there is a lack of precision within the model compared to the HVRR.

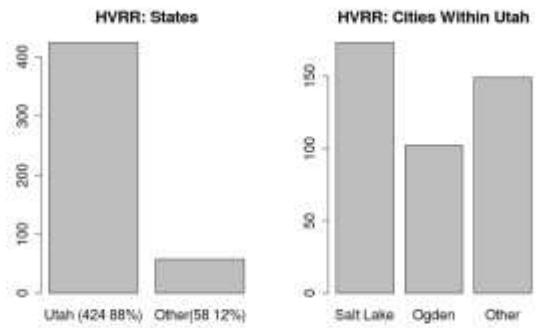
RESULTS

What follows is a discussion of how the Heber Valley Railroad and Soldier Hollow Junior Olympics event were analyzed and the raw data presented.

Heber Valley Railroad

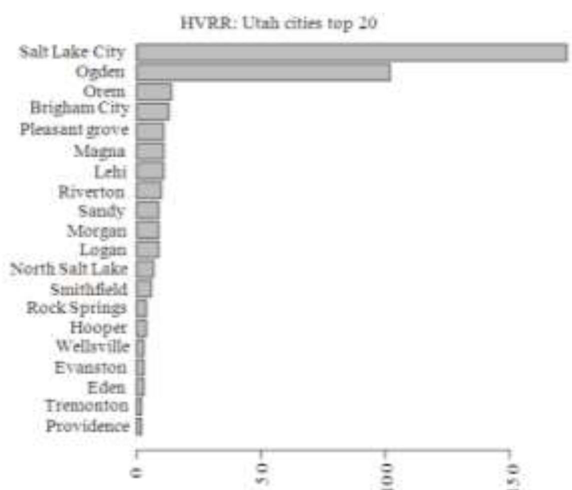
The analysis of the HVRR starts with understanding the distance data and the various levels contained therewith. The distance analysis starts with the frequency of states and one conclusion was clear from the data, Utah is number one. At 88% Utah has the highest number (FIGURE 1); the next closest was Wyoming with 16, Florida at 6, and Colorado and Texas at 4. From that point the data drops off quickly making it hard to distinguish with Utah so high. Having examined the states the next phase was the cities within Utah.

FIGURE 1
HVRR CUSTOMER HISTOGRAM



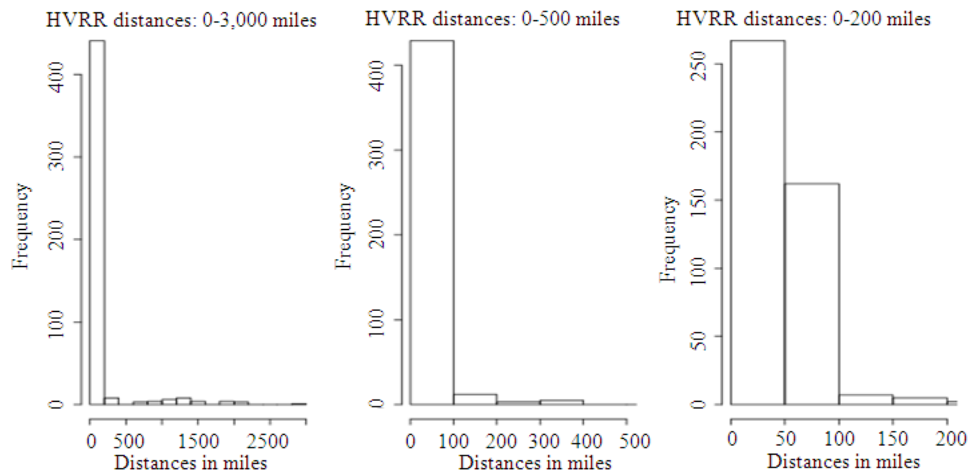
Of the cities within Utah the two biggest are Salt Lake and Ogden, the other group are all the other cities that, like the states data drops 1-4 for each city. The top 20 cities graph (FIGURE 2) shows how quickly the frequency of cities drops off after Salt Lake City and Ogden. From the frequency of states and city, the main source of customers come from Utah and mainly lives in Salt Lake City and Ogden; both of which are within a one-day's drive to HVRR, making it an ideal one day activity (<100 miles).

FIGURE 2
HVRR CUSTOMERS, UTAH CITIES TOP 20



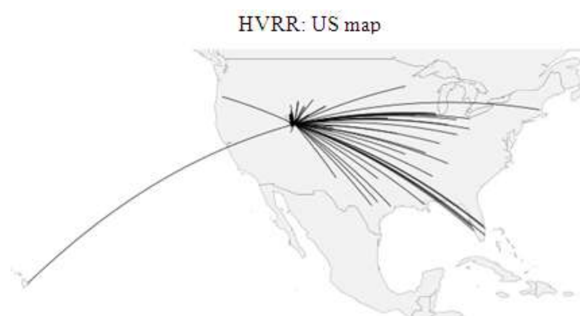
From this point a series of histograms were created based on the distance using the Vincenty ellipsoid formula. The histograms start out with all of the data points to show how positively skewed the data is and a distance range of 0-3,000 miles (FIGURE 3). The second histogram zooms into the data with a range of 0-500 miles and an interval width of 100 miles. The final histogram has a range of 0-200 miles and an interval width of 50 miles, showing clearly how the majority of customers for the HVRR are within 100 miles of the railroad, or in other words within a day trip.

FIGURE 3
HVRR CUSTOMER HISTOGRAMS



The next series of graphs are the maps with a great-circle-curve from the origin (Heber City, Utah) to the participant's location (FIGURE 4 & 5). Figure 4 is a map of the United States with Hawaii, showing a considerable number of participants who come from various areas of the United States. Some visitors are particular groups from Florida, Wyoming, Texas and the Midwest. The second set of maps removes all other participants except for those from Utah (FIGURE 5) and then zooms into what is termed the Wasatch Front, or the metropolitan areas of Salt Lake City, Ogden and Provo.

FIGURE 4
HVRR GREAT CIRCLE CUSTOMER DISTRIBUTION



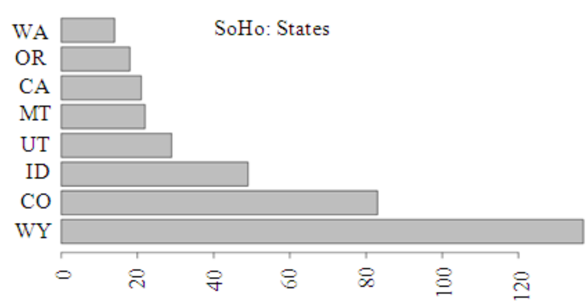
The maps and histograms demonstrate how positively skewed the HVRR distance data is and how the majority of the participants are coming from within 100 miles of HVRR. This is important information for HVRR as they need to know how to advertise and where. Yes participants are coming from all over the United States, but the number is so low, the return on investment if marketing were to be conducted nationally would not be adequate. At this point it should be noted that the data for HVRR is a sample of all the participants from HVRR during an entire year, not a single event. So for the HVRR the majority of participants come from within 100 miles making it a day trip activity, not a multi-day activity or event.

FIGURE 5
HVRR GREAT CIRCLE HISTOGRAM FOR UTAH

Soldier Hollow

The SoHo analysis began with separating the states of participants, which shows more variety compared to HVRR (FIGURE 6). Utah is 4th on the list compared to HVRR where it was first. This difference is significant because the majority of participants are coming from a greater distance than a simple day trip. Junior Olympics participants have to stay in or near Heber City in order to participate. A higher percentage of overnight visitors helps the economy of Heber City and near-by towns as restaurants and hotels are required, thus significantly more money spent by these participants as opposed to HVRR customers who may stop at a restaurant, but not likely stay at a hotel. The next graph for SoHo shows the wide range of cities the participants are coming from (FIGURE 7). From a marketing perspective this is a bit problematic as there is no central concentrated location to focus marketing. But, because cross-country skiing is relatively specialized buisness segment marketing can be focused in a few publications and organizations.

FIGURE 6
SOHO JR. OLYMPICS HISTOGRAM BY STATE



The next SoHo histogram below (FIGURE 8) shows how much more normally distributed the SoHo data is compared to the positively skewed data of HVRR. Because participants are coming from specific areas and several from each location, the data is more evenly distributed, as compared to the large mass of HVRR.

FIGURE 7

SOHO JR. OLYMPICS CITIES HISTOGRAM

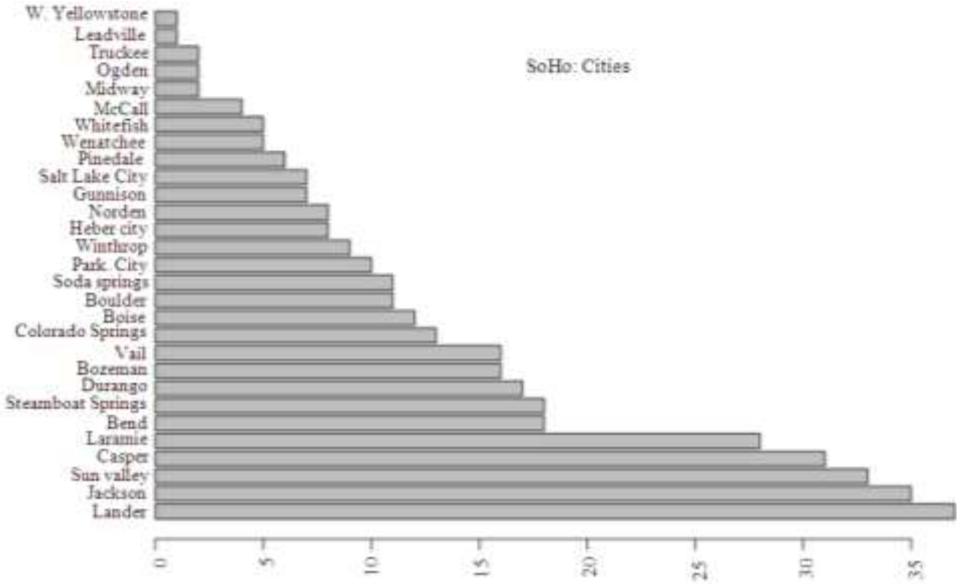
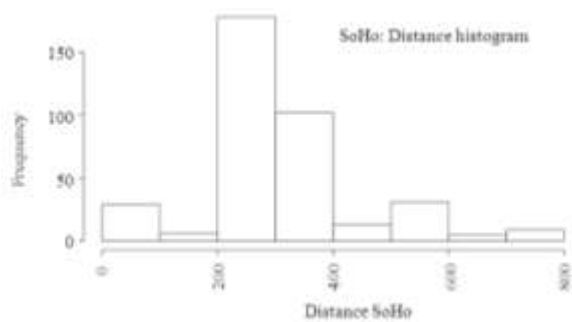


FIGURE 8
SOHO DISTANCE DISTRIBUTION HISTOGRAM



The next graphs are the maps for the SoHo group, where the first one is of the United States (FIGURE 9), then the Western States and Utah (FIGURE 10). The variety of locations from which participants are coming to SoHo for this event is limited to the Western region of the United States. One reason may be due to monetaryrestrictions caused by the down turn in the economy. Remember this is only one event of many during the year at SoHo, as compared to the sample from the HVRR's entire customer database.

The analysis of the map graphs shows how participants are coming from greater distances, while participants are not concentrated from Utah. This dispersion is good for Heber City, as these participants have to stay at least one night, so more money is spent in the Heber Valley on top of the cost of the event. The distance summary statistics reaffirm the conclusion that SoHo has more people coming from greater distance, versus HVRR that is more of a day trip (see table 2).

FIGURE 9

GREAT CIRCLE HISTOGRAM: SOHO

FIGURE 10
GREAT CIRCLE HISTOGRAM, SOHO, MAGNIFIED

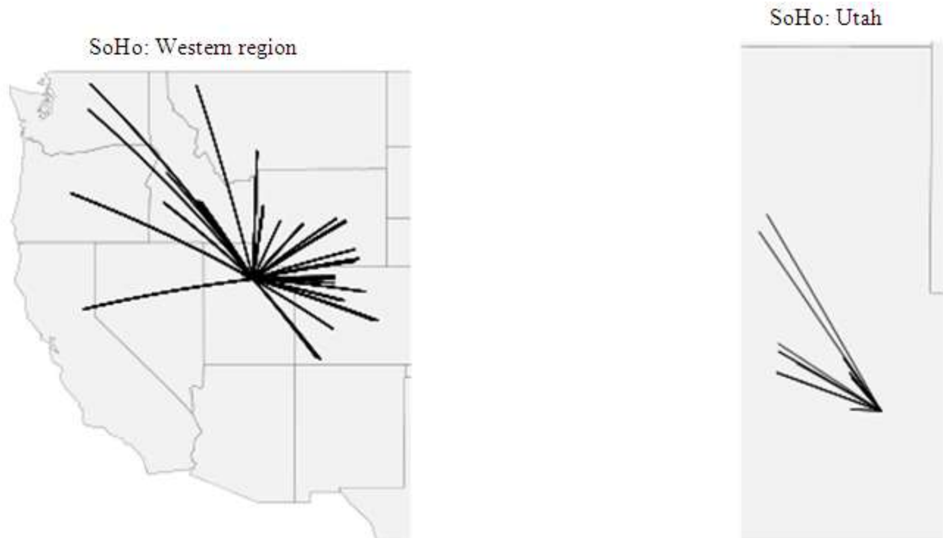


TABLE 2
DISTANCE SUMMARY STATISTICS

	HVRR	SoHo
Min	10.49	0
Median	39.23	284.4
Mean	141.9	299.4
Max	2945.67	704.2
Skewness	0.86	0.31

Limitations

This study has already explained the limitations with using zip codes and distance formulas; which are that the distances used for this model do not account for flying versus driving or any other differences in modes of transportation and that different modes of transportation will not only have longer distances than those used in this model, but the time of travel could be significantly different. Another limitation is the reality that having participants in events stay more than a day does not guarantee that they will use community motels or hotels. When using this model, each entity will have to estimate the additional economic impact of having people stay longer than a day. Wasatch County conducted just such a study (Wasatch County Visitors Survey, 2010, see appendix C), so the results of this model and rubric will be relatively easy to apply in that county. This gravitational model is just one factor of many that an entity could or should evaluate when making strategic decisions by using a rubric.

DISCUSSION

When events are evaluated, especially events that have been around for some time and have become somewhat "sacred" to the community and leaders, people tend to look first at the notoriety or how fashionable the event is. In short, events take on a persona and are also marketed to have an appealing image, thus some events become very emotionally tied to the community and/or the organizers. The authors felt that to maintain some semblance of objectivity an event must first be evaluated based on a measurable economic performance rubric.

The first discriminator is whether or not a specific event pays its own way. Some events or attractions generate enough cash flow to pay any community (government or other) costs. In this study the HVRR has historically fit into the category of paying its own freight, except for some loans from Heber City, Wasatch County governments, and some grants. The Junior Olympic races at SoHo however fit into the category of being a significant cost to the venue. The reason that cross country ski events are being held in the post 2002 Olympics era is that SoHo is also a nonprofit sports foundation whose stated purpose is to produce competitive cross country skiers both at home and in the United States in general. SoHo, then, has to balance the number and cost of events that fit its mission of producing great skiers with those events and activities that produce the cash flow that keeps the venue in the black.

Once an event is separated into one of the two forementioned classes, those events that sustain themselves and those that come at a cost, then the next step is to evaluate those cash flows or costs. Because SoHo is becoming calendar limited due to the popularity of the venue year round and the fact that SoHo has a small full time staff, the venue has had to really look hard at both sustainable events and legacy mission events that bring significant cost to the venue. A large percentage of the new and total revenue is from specialized sports events, weddings and the venue's annual Sheep Dog Classic event. The Soldier Hollow Legacy Foundation Board and the General Manager, Howard Petersen, have to do a fine balancing act between legacy events and other community events that are not yet sustainable and activities that are profitable. And, due to the limited staff, the events are being looked at on a profit per day basis.

The SoHo example shows how different entities in the same community will look at a specific event in a totally different manner. The JO races used in this study come at a cost to the venue, yet those events fill basically every motel in the valley, spilling over into other communities. Soldier Hollow spent $22, 023.63 on competition events in 2010 -11 and is budgeting $86,750 for 2011-12 (Soldier Hollow financials, shown in Spring 2011 Soldier Hollow Legacy Foundation Board meeting minites, available by email through Howard Peterson at howard.peterson@soldierhollow.com). Wasatch County reaps a windfall of hotel and other taxes and the total money spent in the larger community is significant. Businesses, especially the motels, see full occupancy rates during JO races and since cross-country ski competitors can eat 5000 or more calories a day the eateries and grocery stores see additional sales.

Shortly after the Olympics in 2002 the Wasatch Chamber of Commerce estimated that people who stay overnight or longer spend roughly $100 a day per person, while those who visit for an event for just the day spend about $20 per person. The numbers were estimated in part due to the disparity between snowmobilers, who were almost exclusively day only visitors and whom the community was lucky if they bought gas and ate in the area and downhill skiers who tended to stay a week or a weekend. These numbers were just estimates. The recent Wasatch County Visitors Survey (Appendix C) showed that overnight visitors spent between $135 and $224. Assuming an average of $180 per day per individual that stays in a motel, the JO events could possibly bring in roughly $540,000 into this small community in six days. Unfortunately the survey did not show what visitors will spend if they do not stay overnight.

Direct revenues can thus be measured and as shown below can be broken down into the revenues provided by multi-day visitors and those who only stay during the day (see Table 3). Several ratios are shown, including the Hotel Ratio, which measures the ratio of visitors of more than one day versus day only visitors.

The higher the number the more an event draws from significantly outside the local area. The Hotel Duration Ratio is the ratio of multi-day visitors in relation to the total visitors times the average stay in days (length of the event). Hotel Duration Ratio is a good number to measure different sized events as it takes into account the number of days in the event. Hotel Duration Ratio takes away any advantage or disadvantage in size in determining attractiveness of events. Using only Hotel Duration Ratio times the average stay can give lead to an estimate of the total occupancy in the motels. Using the simple formulas given the total estimate of the revenue can be found.

The last part of the rubric (see FIGURE 11) is the Event Gravitational Force Model. The Gravitational Force model numbers feed directly into both direct benefits and qualitative benefits such as branding and marketing of a venue or community. What the model provides that has not been available before is a clear graphical representation of how far out and how many participants attend certain events or attractions. In addition the model can be used to compute average distance per attendee, which indirectly over time may show qualitative marketing and branding effects. Finally, Gravitational Force diagrams for significantly different events can be compared side-by-side or even on top of each other to get direct visual comparisons.

Rubric Limitations & Strategic Considerations

The foregoing rubric is limited by accuracy of estimates of visitor spending and by the limitations inherent in the Events Gravitational Force Model that have already been explained. Comparing events or attractions of different sizes is somewhat problematic in that the colored spokes shown in the gravity graphs do not clearly show the size differences in events being compared graphically. Decision makers will need to take size considerations into their thought processes. The ratios and formulas provided in this paper help to numerically evaluate events beyond what the graphs show. Obviously, too, getting zip codes from visitors is essential to this kind of evaluation. Actual costs for community events are often illusive, as some events require extensive use of volunteers, local organizations and hidden costs for the use of multiple public agencies for policing, ambulance and other costs.

Strategically speaking, the authors would humbly suggest that events be first evaluated in terms of organizational priorities (such as cost, sustainability, profitability, local historical significance, legacy, branding and the like). Once the priorities are set then the Gravitational Force would be used to show graphically the patterns of demand for the event, how the event compares to other events and to help with the calculations of the direct benefits (as in Table 3). Additionally, over time the provided model may provide insight into how well the event, attraction, or the larger community is being marketed and branded.

TABLE 3
COMPARATIVE RATIOS & ECONOMIC MEASURES

Formula/Ratio/Measure	Soldier Hollow Jo	Heber Valley RR
Hotel Ratio	≈ 12.8	< 0.14
Hotel Duration Ratio	≈ 4.36	≈ 0.12
Est. Total Revenue Range	$302,000-$501,000	$1,300,000/yr
Est. Per Day Revenue	$50,333-$83,550	$5,200
Est. County Tax Revenue	$30,200-$50,000	$0 (sales tax exempt)
Incremental Country Costs	None	Unknown
Venue Revenue <Cost>	<$22,023.63> (2010-11)	$1,300,000
	<$86,750.00> (2011-12)	

Note: Both the HVRR and Soldier Hollow are sales tax exempt so the only sales tax revenue from the two entities would come from the local economic multiplier; meaning, revenues staying in the community and being re-spent locally

Direct & Indirect Benefits

Direct benefits are quantitative and can be estimated, but some of the numbers are tricky due to variable tax rates, economic multipliers and lack of dependable data. Finding numbers and models that can accurately compare different events and venues is the central issue of this study. The ratios and measures the authors have settled on are shown in Table 3. The Hotel Ratio is the number of multi-day visitors divided by the number of day only visitors. The Hotel Ratio is higher when an event attracts a larger number of people who stay in hotels. The Hotel Duration Ratio is the number of multi-day visitors' times the average number of days that attendees stay at the event, then that number is divided by the total of all attendees. The Hotel Duration Ratio measures the propensity of attendees to stay in the community or the average stay for attendees. Multiplying the Hotel Duration Ratio by the estimated spending of people that stay overnight gives the estimated range of direct spending in the community and from that number the direct tax benefit can be estimated. None of these numbers include any multiplier effect, so the long-term economic effect will be higher.

All the numbers are helpful; however, the Hotel Ratio and Hotel Duration Ratio seem to be the most informative. The Hotel Duration Ratio is especially helpful as it leads directly to the calculations for the total revenues and the tax revenues. Indirect benefits such as community/event/venue branding are qualitative and hard to measure. But, over successive years the Event Gravity numbers, the Hotel Ratio and Hotel Duration Ratio, along with some of the other direct measures can indicate changes in branding and marketing effectiveness.

Establish Priorities

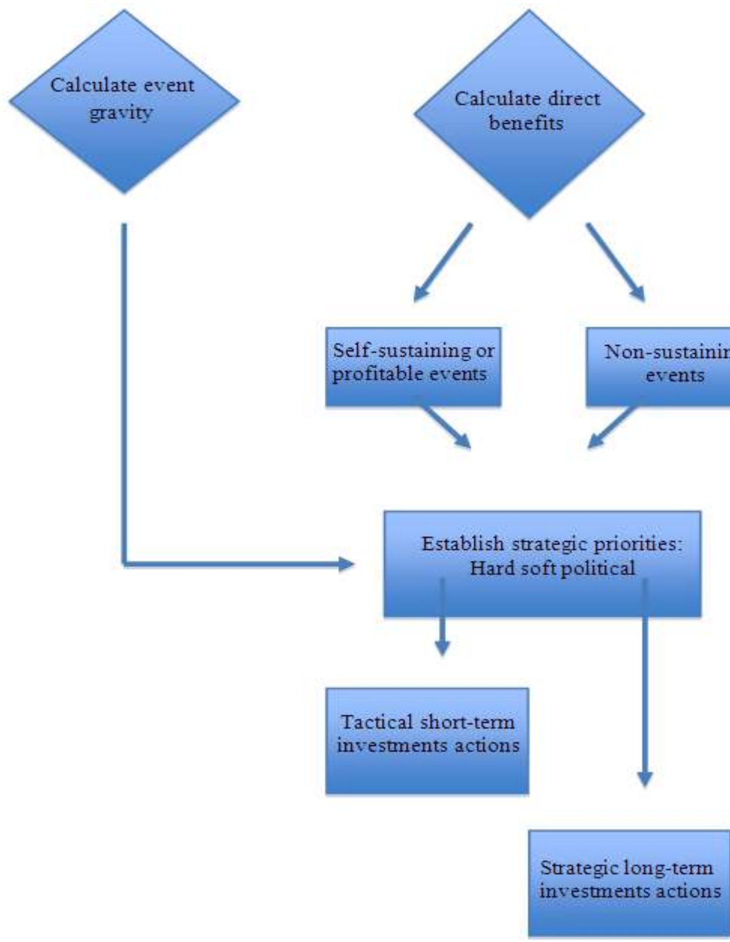
After events and/or venues have been evaluated using the Gravitational Model and the direct benefits have been calculated, the next step is for the governing entity to establish priorities. Often this step is done first and leads to bad decision making as politics and other pressures override reality. The authors have identified three categories of priorities (hard, soft and political) and the order in which they are presented is not intended to be in order of importance. In different situations any of the three could be the most important and the third, political, is often a combination of both hard and soft priorities. In brief the three priorities are as follows:

- Hard: Economic value, Tax revenues, Public/Private costs, Community welfare
- Soft: Community cohesion, Community branding, Community heritage/history, Community emotional attachment
- Political: Voter preferences plus any combination of the Hard and Soft priorities

CONCLUSION

The Event Gravitational Force Model shown in this study (FIGURE 11) provides a visual and quantitative evaluation tool for events of all sizes for communities and organizations. The model measures and graphs attendees in relation to distance traveled and thus visually and numerically evaluates both direct benefits and branding/marketing over the long-term. Additionally, average distance traveled per attendee can be computed. Once the data is loaded into the model graphic and numeric comparisons between various competing events and attractions can be done side-by-side or transposed on the same graph.

FIGURE 11
EVENTS AND DECISION MAKING RUBRIC



Then events can be compared to each other using a cost benefit analysis using the Hotel Ratio and the Hotel Duration Ratio, with other costs and revenue considerations. The Hotel Ratio has shown the most dramatic results of the cost benefit analysis.

The Hotel Ratio looks at the ratios of multi-day visitors to single day visitors, the higher the ratio the more money the community will bring in. With more information, multipliers, average night stay at hotel;

cost of meal, a full picture of potential revenue can be shown to decision makers on where to spend an ever decreasing pool of public funds.

The purpose of the study was to demonstrate, in a rough theoretical way, how the tools presently developed can be used to solve a problem many city, country, even state organizations are facing; which events to fund and which events to not fund. By examining where people come from for events, the number of people who stay longer than one day and the potential revenue from taxes, these organizations can better understand where to put the scarse money they have to get the maximum potential return for their communities.

REFERENCES

Adams, N. L. & Adams, L. L. (2006). Heber Valley Railroad marketing survey. *Mountain Plains Management Conference*, Orem, UT (4th Quarter/Autumn).

Becker, R. A., Wilks, A. R., Browning, R., & Minka, T. P. (2011). *Maps: Draw geographical maps*. Retrived from: http://CRAN.R-project.org/package=map

Halladay, D. & Resnick, R. (1974). *Fundamentals of Physics, Revised Printing*. New York, NY: John Wiley and Sons Inc.

Hijmans, R. J., Williams, E., & Vennes, C. (2011). *Geosphere: Spherical Trigonometry.* http://CRAN.R-project.org/package=geosphere.

Lamigueiro, O. P. (2011). *Great circles, raster, sp and lattice*. Personal Blog. Retrived from: http://procomun.wordpress.com/2011/05/20/great-circles/

Team, R. D. C. (2011). R: A Language and Environment for Statistical Computing. *R Foundation for Statistical Computing*; Austria, Vienna. Retrived from: http://www.R-project.org/

APPENDIX A

DISTANCE FORMULA EVALUATION CODE IN R

```
require(geosphere)
require(maps)
data(us.cities)
#Setting up the data, 'ny' is the long, lat for New York City, 'all' is a matrix of all the cities
# available in the geosphere package (1005), with the long. and lat. data.
ny<-c(-118.41, 34.11)
all<-matrix(data=c(us.cities$long, us.cities$lat), ncol=2)
#Summing the distance between NY and all the other cities in the US (1005 of them)
#by so doing the error is compounded with each additional city
hav<-sum(distm(ny, all, fun=distHaversine))
hav.time<-proc.time()
v.sphere<-sum(distm(ny, all, fun=distVincentySphere))
v.sphere.time<-proc.time()
v.ellip<-sum (distm(ny, all, fun=distVincentyEllipsoid))
v.ellip.time<-proc.time()
hav.time; v.sphere.time; v.ellip.time;
proc.time<-c (1.350, 1.350, 2.510)
```

```
row.names<-c('Haversine','Vincenty.Sphere', 'Vincenty.Ellipsoid')
ny.all<-rbind(hav, v.sphere, v.ellip); ny.all<-cbind(ny.all, proc.time)
rownames(ny.all)<-row.names; colnames(ny.all)<-c('Sum Distance', 'Processor Time'); ny.all
#Determining the difference between the various models available in the geosphere package
#Meters were conveted into miles, the largest difference between the models was approximately
#1090 miles, or 1.085326 miles per city of difference, this is considerable
hav.v.ellp<-(v.ellip-hav)*0.000621371192
hav.v.sphere<-abs(hav-v.sphere)*0.000621371192
hav.v.ellp; hav.v.sphere
diff<-rbind(hav.v.ellp, hav.v.sphere)
rownames(diff)<-c('Haversine-Vincenty.Ellipsoid','Haversine-Vincenty.Sphere')
colnames(diff)<-'Distance (miles)'; diff
#what is the average error
hav.v.ellp/1005
# In the end the Vincenty.Ellipsoid was used as the method for determining the distance as it was
# the most procise by an average margin of 1.0853 miles per city, this is a significant margin of
# error when many cities are being analyzed and the extra computing time in negligible
```

APPENDIX B

CODE FOR HVRR AND SOHO ANALYSIS IN R

```
require(geosphere)
require(maps)
#HVRR Analysis
#Step 1: basic Stats. Summaries, Histograms, bar charts
#reading the file in
hvrr<-read.table(file.choose(), header=TRUE)
#summary stats
summary(hvrr)
#histograms
par(mfrow=c(1,2))
label.1<-c('Utah (424 88%)', 'Other(58 12%)')
state<-c(424, 58)
barplot(state, names.arg=label.1, main='HVRR: States', col='blue')
label.2<-c('Salt Lake', 'Ogden', 'Other')
cities<-c(173, 102, 149)
barplot(cities, names.arg=label.2, main='HVRR: Cities Within Utah', col='blue')
par(las=2, mar=c(5,12,4,2), mfrow=c(1,1))
city.1<-sort(table(hvrr$city))
city.1<-tail(city.1, n=20)
barplot(city.1, col='blue', hor=TRUE, main='HVRR: Utah Cities Top 20')
par(las=0, mar=c(5,4,4,2))
#distance analysis
heber<-c(-111.33259, 40.511413)
data<-matrix(data=c(hvrr$long, hvrr$lat), nrow=482, ncol=2)
ut<-subset(hvrr, subset=(st=='UT'))
data.ut<-matrix(data=c(ut$long, ut$lat), nrow=424, ncol=2)
dist<-(distm(heber, data, fun=distVincentyEllipsoid)*0.000621371192)
dist.rr<-matrix(dist, nrow=482, ncol=1)
```

```
hvrr<-cbind(hvrr, dist.rr)
#histograms of various shapes and zooms
summary(dist.rr)
par(mfrow=c(1, 3))
hist(dist.rr, breaks=12, main='HVRR Distances: 0-3,000 miles', xlab='Distance in Miles', col='blue')
hist(dist.rr, breaks=24, main='HVRR Distances: 0-500 miles', xlab='Distance in Miles', xlim=c(0, 500),
col='blue')
hist(dist.rr, breaks=50, main='HVRR Distances: 0-200 miles', xlab='Distance in Miles', xlim=c(0, 200),
col='blue')
par(mfrow=c(1,1))
#mapping it out
#US
map("world", col="#f2f2f2", fill=TRUE, bg="white", lwd=0.25, xlim=c(-158, -65), ylim=c(15, 50))
title(main='HVRR: US Map')
for(i in 1:dim(data)[1]){
 inter <- gcIntermediate(heber, data[i, 1:2], n=482, addStartEnd=TRUE)
 lines(inter, col="blue")
}
#Zoomed into Utah
par(mfrow=c(1,1), mar=c(5,4,4,2))
map("state", col="#f2f2f2", fill=TRUE, bg="white", lwd=0.25, xlim=c(-115, -108), ylim=c(37, 42))
title(main='HVRR: Utah')
for(i in 1:dim(data.ut)[1]){
 inter <- gcIntermediate(heber, data.ut[i, 1:2], n=424, addStartEnd=TRUE)
 lines(inter, col="blue")
}
#Wasatch Front
map("state", col="#f2f2f2", fill=TRUE, bg="white", lwd=0.25, xlim=c(-112.5, -111), ylim=c(40, 42))
title(main='HVRR: Utah- Wasatch Front')
for(i in 1:dim(data.ut)[1]){
 inter <- gcIntermediate(heber, data.ut[i, 1:2], n=424, addStartEnd=TRUE)
 lines(inter, col="blue")
}
par(mfrow=c(1,1))
#Soldier Hallow Analysis
soho<-read.csv(file.choose(), header=TRUE)
summary(soho)
table.city<-sort(table(soho$city), decreasing=TRUE)
table.st<-sort(table(soho$state), decreasing=TRUE)
par(mar=c(5, 11, 4, 2), las=2)
barplot(table.city, main='SoHo: Cities', horiz=TRUE, col='red')
par(mar=c(5, 4, 4, 2), las=2)
barplot(table.st, main='SoHo: States', horiz=TRUE, col='red')
heber<-c(-111.33259, 40.511413)
soho.data<-matrix(data=c(soho$long, soho$lat), nrow=373, ncol=2)
soho.ut<-subset(soho, subset=(state=='UT'))
soho.data.ut<-matrix(data=c(soho.ut$long, soho.ut$lat), nrow=29, ncol=2)
soho.dist<-(distm(heber, soho.data, fun=distVincentyEllipsoid)*0.000621371192)
soho.dist.ut<-(distm(heber, soho.data.ut, fun=distVincentyEllipsoid)*0.000621371192)
dist.soho<-matrix(soho.dist, nrow=373, ncol=1)
dist.soho.ut<-matrix(soho.dist.ut, nrow=29, ncol=1)
```

```
summary(dist.soho)
sd(dist.soho)
p.skew.soho<-(3*(mean(dist.soho)-median(dist.soho)))/sd(dist.soho)
hist(dist.soho, main=‘SoHo: Distance Histogram’, col=‘red’)
hist(dist.soho.ut, main=‘SoHo: Distance Histogram Utah’, breaks=20, col=‘red’)
#mapping it out
#US
map("state", col="#f2f2f2", fill=TRUE, bg="white", lwd=0.25)
title(main=‘SoHo: US Map’)
for(i in 1:dim(soho.data)[1]){
 inter <- gcIntermediate(heber, soho.data[i, 1:2], n=373, addStartEnd=TRUE)
 lines(inter, col="red")
}

#Zoomed into West
par(mfrow=c(1,2), mar=c(5,4,4,2))
map("state", col="#f2f2f2", fill=TRUE, bg="white", lwd=0.25, xlim=c(-125, -103), ylim=c(30, 50))
title(main=‘SoHo: Western Region’)

for(i in 1:dim(soho.data)[1]){
 inter <- gcIntermediate(heber, soho.data[i, 1:2], n=373, addStartEnd=TRUE)
 lines(inter, col="red")
}
#Utah
map("state", col="#f2f2f2", fill=TRUE, bg="white", lwd=0.25, xlim=c(-112.1, -111), ylim=c(40, 42))
title(main=‘SoHo: Utah’)
for(i in 1:dim(soho.data.ut)[1]){
 inter <- gcIntermediate(heber, soho.data.ut[i, 1:2], n=29, addStartEnd=TRUE)
 lines(inter, col="red")
}
par(mfrow=c(1,1))
```

APPENDIX C

ESTIMATED AVERAGE SPENDING OF VISITOR TO HEBER VALLEY

The following table shows a comparison between segments of the population with respect to their average spending per day during their stay in Heber Valley, Utah, USA. The table has been copied from page 8 of the Wasatch County Visitors Survey Report Prepared for Wasatch County Tourism and Economic Development Office, dated November 1, 2010. The full 84 page report and questions about the report can be acquired and answered through Ryan Starks, Director of Tourism and Economic Development for Wasatch County (phone 435-654-3666, email ryanstarks@gohebervalley.com).

Table 3

Estimated Average Spending of Visitor to Heber Valley

Average Per Day Spending	Count	Average
Visitors Age 18 to 34	139	$151
Visitors Age 35 to 44	113	$188
Visitors Age 45 to 54	119	$219
Visitors Age 55 to 64	127	$191
Visitors Age 65 or Older	87	$135
In-State Visitors	498	$172
Out-of-State Visitors	90	$224
Before Labor Day Weekend	78	$139
Labor Day Weekend	252	$216
After Labor Day Weekend	260	$159
Swiss Day Visitors	223	$221
Non-Swiss Day Visitors	367	$156
Conference Visitors	66	$139
Non-Conference Visitors	465	$193