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An Historical Analysis of Reversal Theory Conference Presentations (1995–2015)

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It has been suggested that reversal theory should endeavour to pursue more empirical studies (Cramer, 2013), yet continue to develop tools and applications; thus the present study examined the category of papers (N = 323) featured at reversal theory conferences from 1995–2015. Conference papers were divided into (initially three but later) five categories: templative, theoretical, empirical, application, and tool development. Empirical (hypothesis testing with statistical analysis of collected data) was the largest category (39%), followed by templative (31%), theoretical (16%), and both tool development and application (7% and 6%, respectively). The number of empirical studies, which declined over time, negatively correlated with both the number of applications and theoretical papers in a given year. Cluster analysis showed three distinct patterns of categorical distribution. Implications for future research are discussed, including how conferences have directed subsequent research and vice versa.

Keywords: reversal theory, historical analysis, conference proceedings, cluster analysis

Reversal theory has a long and colorful history, dating back to its inception in Bristol, UK, in 1975. Veterans of the theory have seen it unfold from theoretical seedlings and flourish into a wide array of real-world applications and pursuits. So too, witnesses to its growth would have further seen the development of a series of tools and measures, with diverse and compelling empirical support (Apter, 1989, 2001; Apter, Fontana, & Murgatroyd, 1985). The establishment in 2013 of a scholarly periodical – the *Journal of Motivation, Emotion, and Personality* – helped to disseminate the unique contributions of reversal theory across these domains, as did presentations and posters shared at biennial international conferences. The present paper offers a cross-sectional analysis of the relative contents of papers presented at these conferences from 1995 to 2015.

Reversal Theory, Application, and Tool Development

Reversal theory has provided a useful framework for many investigators looking to explore interactions and events from a new psychological perspective, has prompted the advent and revision of several measurement tools, and has lent itself to many practical applications. As an example, let us consider the *Reversal Theory State Measure* (Desselles, 2014) – administered multiple times throughout the day to a respondent's smartphone to assess all eight metamotivational states (a feature unavailable in previous measurement tools). Thereafter, researchers could apply these new tools to the evaluation of testable hypotheses. Other tools still in widespread use were similarly developed from a clear need put forward at prior conferences, including the *Rebelliousness Scale* (Klabbers et al., 2009), the *Telic/Paratelic State Inventory* (Cook & Gerkovich, 1993), and the *Motivational Style Profile* (Apter, Mallows, & Williams, 1998).

Reversal theory has also provided a viable explanation for various real-world issues (Apter & Desselles, 2012), such as the possible links between people's television program choices and perceived threat (Portell & Mullet, 2014), teachers motivating their students (Cramer & Lafreniere, 2015), or the inception of smoking cessation programs (O'Connell, Gerkovich, Bott, Cook, & Shiffman, 2000). Overall then, reversal theory has branched comfortably free of its central theoretical trunk into measurement, tool, and application.

A Portrait of the Past – the Present Study

On a biennial basis, the *Reversal Theory Society* hosts an international conference featuring between 20 and 45 presentations on a host of reversal theory issues and has done so since 1983, when the first international conference run by the Society was held in Gregynog, Wales. We can garner a more comprehensive picture of the field and its development from an analysis of the categories of constituent papers and posters

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delivered at these conferences[1]. This constitutes a suitable response to Cramer's charge that as a field, reversal theory could greatly benefit from more empirical studies, believing we had to date produced too few:

> With solid and sound psychometric instruments available for widespread use, researchers may then make and test their hypotheses, which should necessarily grow from directional to point predictions as the theory evolves. Many studies to date have mapped Reversal Theory constructs into the everyday lives of people – be it in popular music or arctic exploration – but these studies, while compelling, offer little support as to the veracity of the theory, since many models of personality and motivation could well explain the same behavior. The time for more rigorous and theory-driven hypothesis testing is nigh (Cramer, 2013, p. 14).

The present study evaluated a cross-section of 11 biennial conferences from 1995[2] to 2015 as catalogued into a series of specific categories. Furthermore, we evaluated the correlation (and auto-correlation) among the categories to build predictive models for any given set of conference papers. Finally, a cluster analysis of the individual conference profiles was empirically grouped into three families of conferences, each with a distinct profile. Overall, this analysis should guide researchers, theorists, and social and community utilizers of reversal theory to pose suitable questions with the aim toward stronger and more comprehensive theory building, tool development, and real-world application. Specifically, in a cyclical manner, researchers may call upon tool-builders to develop useful instruments so as to evaluate new theoretical hypotheses; additionally, tool-development should spur new applications with further theoretical outreach.

Method

In order to examine trends and changes in conference proceedings, the 323 abstracts from reversal theory conferences held between 1995 and 2015 were coded into (initially three but later) five categories. The initial three categories were templative, theoretical, and empirical:

Templative Studies attempt to identify reversal theory concepts within archival or naturalistic or observed data, including newspaper or diary entries, musical lyrics, or case studies of noteworthy individuals – they are chiefly observational, naturalistic, and descriptive in their mechanics. Indeed, these studies necessarily collect data, but rarely conduct statistical analyses; no hypothesis is tested short of observing a predictable pattern (or template) within the observations. Researchers often count instances of an observed behavior (e.g., identifying a paratelic state in the testimony of an arctic explorer) rather than test a specific element within reversal theory. For example, this category would include studies that look for evidence of reversal theory states in a set of Bruce Springsteen song lyrics or in a journal from a famous World War II historical figure. As scientific weight for reversal theory, templative studies offer less rigorous support since many different theories could similarly be rendered equally valid by identifying a particular pattern within a set of data (Cramer, 2013).

Theoretical Studies do not collect data or explore testable hypotheses, but rather suggest future research, possible connections between variables, or even flesh out entanglements within the theory (Cramer, 2013). The theory's founder, Michael Apter, opened the *Journal of Motivation, Emotion, and Personality* with a broad-stroke analysis of what reversal theory research has uncovered to date and what remains unknown (Apter, 2013). At the biennial conference, keynote speakers often draw together new directions in novel areas – such as Martin's (2007) presentation on the connection between reversal theory and humor (Gregynog, 2007) and Parker's (2015) presentation on the connection between reversal theory and emotional intelligence (Niagara, 2015).

Empirical Studies present clear and testable hypotheses, collect data, and are analyzed using often complex statistics. For example, researchers may hypothesize that a certain activity (e.g., feeling bored in the classroom) will be associated with a reversal from the telic to paratelic state (Cramer & Lafreniere, 2015). They may then collect survey data or observational data from participants, code the results, and then analyze with statistics (i.e., correlation, factor analysis, and so on) to determine if there is evidence to support the proposed hypothesis. The scope of empirical investigations into reversal theory remains broad and diverse, including, for example, sports (Kerr, 1997), addiction (Loonis, Apter, & Sztulman, 2000), psychophysiology (Svebak & Lewis, 2001).

Although the abstracts were initially coded into these three categories, we noted during the initial stages of cataloging that some abstracts could seemingly belong to more than one category and some failed to fit neatly into any category according to the trifecta of definitions. In an aim to be comprehensive (and not exclude any abstracts), two additional categories were created and cataloged, and the entire process reinitiated. The two additional categories were Applications and Tool Development Studies (both originally subsumed under Empirical Studies).

Application conference papers highlight (in the context of reversal theory) a delineation of real-life problems and

[1] Although one may argue that the present review of conference abstracts could be combined with a review of published papers, that question – while worthwhile – is beyond the scope of the present paper

[2] Although our original intention was to extend data collection back to 1983, we could not retrieve the full set of abstracts before 1999.

Table 1
Abstract Number (Percentage) Coding by Year and Category.

Year (Venue)	Templative	Theoretical	Empirical	Application	Tool Devpt.	Total
1995 (Melbourne, AU)	5 (18%)	4 (14%)	13 (46%)	2 (7%)	4 (14%)	28
1997 (London, UK)	14 (30%)	8 (17%)	20 (43%)	3 (6%)	2 (4%)	47
1999 (Winnipeg, CA)	9 (26%)	7 (21%)	13 (38%)	1 (3%)	4 (12%)	34
2001 (Tasmania, AU)	6 (27%)	3 (14%)	10 (45%)	1 (5%)	2 (9%)	22
2003 (York, UK)	7 (23%)	5 (16%)	15 (48%)	4 (13%)	0 (0%)	31
2005 (Winnipeg, CA)	5 (19%)	7 (27%)	11 (42%)	1 (4%)	2 (8%)	26
2007 (Gregynog, UK)	10 (27%)	6 (16%)	16 (43%)	3 (8%)	2 (5%)	37
2009 (N.Orleans, US)	12 (55%)	1 (5%)	8 (36%)	0 (0%)	1 (5%)	22
2011 (Washington, DC)	13 (52%)	3 (12%)	6 (24%)	2 (8%)	1 (4%)	25
2013 (Reims, FR)	14 (47%)	5 (17%)	7 (23%)	1 (3%)	3 (10%)	30
2015 (Niagara, CA)	4 (19%)	5 (24%)	8 (38%)	1 (5%)	3 (14%)	21
TOTAL	99 (31%)	54 (17%)	127 (39%)	19 (6%)	24 (7%)	323

Table 2
Categorical Inter-correlations (N = 11).

Category	Year	Templative	Theoretical	Empirical	Application	Tools
Year	1.00					
Templative	0.17	1.00				
Theoretical	-0.32	-0.03	1.00			
Empirical	-0.71*	-0.02	0.65*	1.00		
Application	-0.33	-0.07	0.39	0.69*	1.00	
Tool Development	-0.24	-0.23	0.32	0.00	-0.37	1.00

Note. *Correlations ±.60 are significant at $p < .05$.

offer up viable and often (but not exclusively) empirically-supported solutions. For example, they may involve the application of reversal theory concepts to teaching in the classroom, or in a rehabilitation clinic, or to care of those with intellectual disabilities.

Tool Development Studies offer researchers and practitioners new or improved instruments for the assessment of reversal theory constructs (e.g., Rebelliousness). They may collect data, and include statistics such as measures of internal validity, reliability, and correlations; however, some may also just propose a tool or measure for subsequent development and not provide any data.

Each of the 323 abstracts from the 1995 through 2015 reversal theory conferences were coded by two independent student raters (only lightly familiar with reversal theory) into the five categories according to the descriptive definitions and criteria: templative, theoretical, empirical, application, and tool development. For the 12 abstracts where raters disagreed on the appropriate category, those abstracts were reviewed by a third independent rater, and group consensus was reached following a discussion among the three raters, achieving a 100% concordance rate.

Results

Table 1 outlines the frequency distribution of the 323 coded abstracts across the 11 conferences (1995-2015); the analysis revealed several key differences in their distribution (Figures 1 and 2). To begin, empirical studies overall occupied the greatest proportion of conference papers (39%), followed by templative (31%), theoretical (17%), and tool development and applications (7% and 6%, respectively). We also note the relative decrease in empirical studies over time, from nearly half of conference presentations in the beginning to less than a quarter in both 2011 and 2013; Spearman $r_s(9) = -0.71, p < .0144$ (see Table 2). Conversely, templative studies witnessed a significant, albeit modest, increase in frequency (47% to 55%) from 2009 to 2013. Theoretical papers were comparatively rare in 2009 (5%), whereas applications doubled in 2003 to 13%. Finally, the relative frequency of tool development was distributed as a parabola, with higher frequencies observed both early and late in the conference timeline, but with lower frequencies during the middle conference years. The number of empirical studies featured at a given conference also correlated positively with both the number of theoretical papers, $r_s(9) = 0.65, p = .0304$; and the number of applications, $r_s(9) = 0.69, p = .0188$.

A multiple regression analysis showed that the number of empirical studies presented at a given conference could be

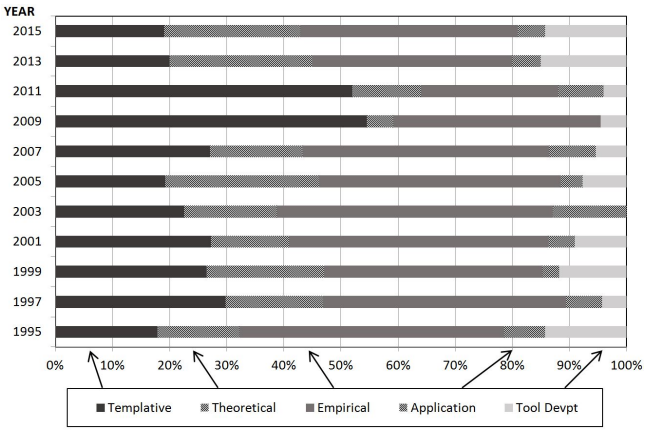

Figure 1. Stacked Bar Chart of Abstract Conference Coding by Year.

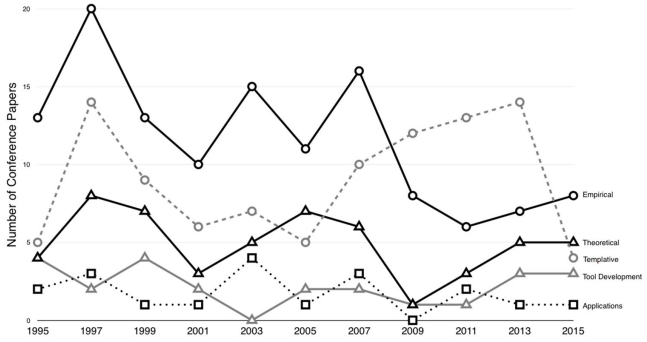

Figure 2. Cross-Section of Conference Paper Categories by Year.

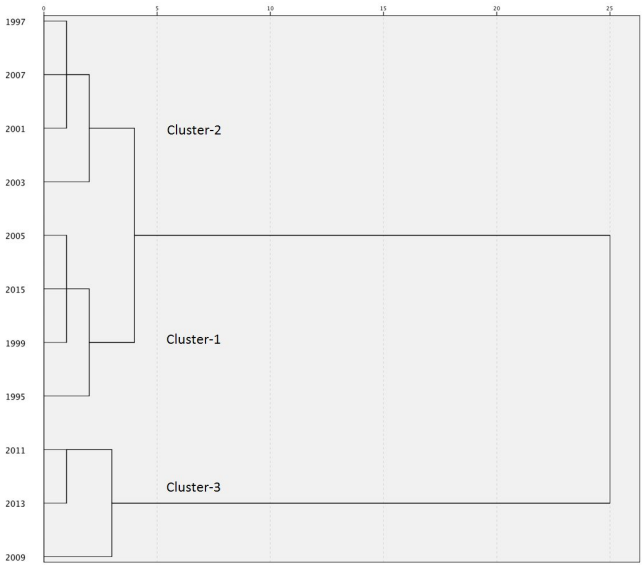

Figure 3. Hierarchical Cluster Analysis of Category Percentages Across 11 Conferences.

predicted by a model (74% explained variance, $F(2, 8) = 11.07, p = .005$), which included both conference year ($\beta = -.535, t = -2.77, p = .024$; viz. fewer empirical studies appeared in each subsequent conference) and the number of featured applications ($\beta = .517, t = 2.68, p = .028$; viz. more application presentations predicted more empirical studies). Although a Durbin-Watson statistic (1.995) found no evidence for auto-correlation in predicting the number of empirical studies (i.e., predicting one year of data based on prior years), there was a marginal auto-correlation effect when predicting the number of applications, $r(1) = -0.467, DW = 2.772, p = .078$; this suggests – at least marginally – that the number of papers featuring applications in a given year was likely to be higher provided there were fewer empirical papers presented at the conference two years prior. Given fewer than 50 observations in our conference years, we were unable to conduct a full time-series analysis (Tabachnick & Fidell, 2013).

We converted the frequency data in Table 1 into percentages for each year (e.g., five papers (17.86%) at the 1995 conference were Templative). When divided by earlier (1995-2003) vs. more recent (2007-2015) conferences, a Mann-Whitney test of categorical differences indeed confirmed nonparametrically that fewer empirical studies were showcased at more recent conferences; $z = 2.19, p = .028$. We then conducted a cluster analysis of the data (using Ward's method with squared Euclidean distances) so as to group similar conference years according to their distribution of the five conference proceedings categories (Everitt, 1993; Gordon, 1987). Figure 3 shows three groupings of conference years: Cluster-1 (1995, 1999, 2005, 2015); Cluster-2 (1997, 2001, 2003, 2007), and Cluster-3 (2009, 2011, 2013).

Examination of the Euclidean distances showed that Cluster-1 – while distinct – quickly joined with Cluster-2; and only later did they both join with Cluster-3. We calculated the mean percentages of categories by cluster to determine what defined each cluster (see Table 3). We acknowledge the low sample size herein and urge the reader to treat the following analysis as strictly exploratory in nature. A Kruskal-Wallis non-parametric test for differences among the three clusters showed that the third cluster of conferences featured significantly more templative papers (p = .016) and fewer empirical papers (p = .028) than both the first and second clusters of conferences. A Mann-Whitney test showed that the second cluster of conferences featured more templative papers and less tool development compared to the first cluster of conferences (zs = 2.03, ps = .042). Similarly, the second cluster of conferences featured more empirical but fewer templative papers than the third cluster of conferences (zs = 2.12, ps = .034).

Table 3
Non-parametric Analysis of Categorical Averages across Cluster.

	Cluster Assignments			Kruskal-Wallis	
	Cluster-1	Cluster-2	Cluster-3	χ^2	p
Templative	$20.65\%_a$	$26.67\%_b$	$51.07\%_c$	8.23	.016
Theoretical	$21.40\%_a$	$15.75\%_{ab}$	$11.07\%_b$*	4.30	<.10
Empirical	$41.27\%_a$	$44.91\%_a$	$27.90\%_b$	7.14	.028
Application	$4.67\%_a$	$7.98\%_a$	$3.78\%_a$	2.96	n.s.
Tool Development	$12.01\%_a$	$4.69\%_b$	$6.18\%_{ab}$	5.24	.073

Note. Percentages with identical subscripts are not significantly different ($p < .05$); subscripts with an asterisk (b*) constitute marginally significant differences ($p < .10$)

Discussion

The present study examined the characteristic composition of eleven reversal theory conferences (1995 to 2015) according to five criteria – whether the featured conference presentation was templative, theoretical, empirical, an application, or offered audience members a new tool or measurement instrument. We noted several key findings. To begin, when collapsed across all eleven conferences, the pattern revealed a greater proportion of empirical studies, followed by templative, theoretical, and finally (far smaller) tools and applications. More noteworthy is the change in those proportions over time, so that from 1995 to 2015, the proportion of empirical studies significantly decreased while the proportion of templative studies increased. Furthermore, the number of empirical studies and applications was inversely related, so more applications implied fewer empirical studies; a marginally-significant auto-correlation suggested that the number of applications (in, for example, 2003) was marginally higher had the number of empirical studies featured at the previous conference been fewer. Although the cluster analysis remained exploratory (given only eleven conferences), it did reveal three distinct families or clusters of conferences. Compared to the other two clusters, Cluster-3 conferences were more templative and less empirical. Cluster-2 conferences (compared to Cluster-1 conferences) were more templative and featured fewer tools; but compared to Cluster-3 conferences were more empirical and less templative.

Indeed, Cramer's (2013) appeal for more empiricism appears to be grounded, at least when considered among recent conferences; however, collapsing across all eleven conferences, empiricism did occupy the greatest space in the wider field. Recall that the goal in this analysis was to offer researchers and practitioners a worthwhile guide so as to direct future research and concerted efforts toward effective theory building, tool development, and real-world application. The analysis may offer future conference organizers a useful barometer of the relative distribution of theory development in the field. That is, following a conference that featured an abundance of theoretical discussion, a subsequent conference may offer the empirical support for those fleshed-out hypotheses; thereafter, tools, measures, and applications would assuredly follow. Future conference organizers might wish to make an appeal toward the presentation of tools or measures or a panel discussion of recent applications in the areas of health or business. Alternatively, a summary of the conference could leave attendees with new avenues to pursue in the two years leading up to the subsequent conference.

In conclusion, reversal theory studies and their derivative conferences have changed in many ways between 1995 and today, exhibiting clear trends and patterns. The 2015 conference year presented a notable change in terms of research being conducted, in (what the researchers on this study would call) a positive direction toward empiricism and away from the templative frame that has been prominent throughout much of the conference history. While consistent with Cramer's (2013) suggestion, it is unclear currently whether this change in the trend will continue or rather revert. Therefore, routine post-conference follow-up may be advantageous to further monitor how research, application, and practice of reversal theory continues to evolve. Furthermore, historical and directive analyses (e.g., Apter, 2013) should prove useful for researchers looking to address remaining or under-supported elements in the theory.

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