the iafor journal of psychology & the behavioral sciences

Volume 5 – SI – Autumn 2019 Special Issue on Creativity Guest Editor: Arpan Yagnik





iafor

IAFOR Journal of Psychology & the Behavioral Sciences Volume 5 – SI –Special Issue on Creativity

IAFOR Publications

IAFOR Journal of Psychology & the Behavioral Sciences

Special Issue Guest Editor

Dr Arpan Yagnik, Assistant Professor, Penn State University, USA

Editors in Chief

Dr Sharo Shafaie, Professor, Southeast Missouri State University, USA Dr Deborah G. Wooldridge, Professor, Bowling Green State University, USA

Guest Assistant Editor

Dr Jean M. Gerard, Bowling Green State University, USA

Reviewers

Dr Kristin D. Biondolillo, Professor, Arkansas State University, USA Dr Christina Branham, Assistant Professor, Northeastern University, USA Dr Catherine P. Chou, Assistant Professor, Southeast Missouri State University, USA Dr Sharon J. Davis, Associate Professor. MRC Program Coordinator, Arkansas State University, USA Dr Bryan Gere, Assistant Professor, Alabama A&M University, USA Dr Bryan Gordon, Assistant Professor, Northwestern Oklahoma State University, USA Dr Brittany Joseph, Bowling Green State University, USA Dr Gloysis Mayers, Associate Professor, Zayed University, UAE Dr Melissa Monney, Assistant Professor, Abu Dhabi University, UAE Dr Melissa Monney, Assistant Professor, Southeast Missouri State University, USA Dr Gail Overbey, Professor, Southeast Missouri State University, USA Dr Gail Overbey, Professor, Southeast Missouri State University, USA Dr Sandra Poirier, Professor, Middle Tennessee State University, USA

Graduate Students Editorial Assistants

Sriya Chattopadhyay, Graduate Student, Bowling Green State University, USA Josiah N. Wynn, Graduate Student, Southeast Missouri State University, USA

Published by The International Academic Forum (IAFOR), Japan Executive Editor: Joseph Haldane Publications Manager: Nick Potts

IAFOR Publications Sakae 1-16-26-201, Naka-ward, Aichi, Japan 460-0008 IAFOR Journal of Psychology & the Behavioral Sciences Volume 5 – Issue SI – 2019 Published October 10, 2019

> IAFOR Publications © Copyright 2019 ISSN: 2187-0675

> > ijpbs.iafor.org

IAFOR Journal of Psychology & the Behavioral Sciences

Volume 5 – SI – Autumn 2019 Special Issue on Creativity

Guest Editor: Dr Arpan Yagnik

Table of Contents

Does Engaging in Creative Activities Influence the Use of Coping Skills and3Perception of Challenge-Skill Balance in Elite Athletes?
Veronique Richard
Yanyun Yang
Mark Runco
Ahmed M. Abdulla
Gershon Tenenbaum
Rewarding Creative Problem Solving and Expectations for Creative Motives21Competence and Satisfaction of Workers During Critical Incidents21Fomba Emmanuel Mbebeb21
Creative Cognition: Conceptual Blending and Expansion in a Generative 43
Exemplar Task
Brian J. Birdsell
Telling Stories to Narrate Futures: Engaging Storytelling as Research Practice63with High School FemalesAmanda Hill
Creative Confrontations: Exploring Activism, Surveillance, and Censorship in China and the United States Elizabeth A. Brunner Kevin M. DeLuca

Editors' Note

It is my immense pleasure to bring to you the first themed special issue of the *IAFOR Journal of Psychology & the Behavioral Sciences*. This special issue is devoted to creativity. It brings to you a collection of five unique articles on creativity and its application in diverse fields. There were numerous high-quality interesting scholarly papers and I want to thank everyone who submitted their abstract for consideration. Submissions for the special issue are from scholars in the United States and the other two articles are from scholars from Japan and Cameroon.

Systematic study of creativity began in the 1950s. The last thirty years have shown a burgeoning interest in understanding and enhancing creativity. With our ecosystems transitioning from stable growth economies to gig economies and change economies, the importance of creativity has remarkably increased. Individuals who cannot adapt to the disruptive changes in the market struggle and their growth is eventually stifled. Creativity enables individuals to adapt and thrive, especially in the change or gig economies. The rise of creative class and their success is a testimony to the worthiness of creativity. Creativity has been associated with the genesis of game-changing ideas and is found at the core of disruptive market ideas.

Creativity is a powerful transformative force. Creativity, I strongly believe, is the harbinger of positive human change. Change is a given in all of our lives, the inclusion and application of creativity facilitates directed change. Personally, creativity has enabled me to inch closer to a life that is full of meaning and fulfillment. My work in creativity originally stemmed from its use in advertising and its potential application in crafting creative content to destigmatize and normalize the menstrual taboo. It has now moved further into expanding the role of creativity in numerous important areas such as governance, leadership, development, entrepreneurial decision making, and more. In addition to the scholarly work, I also conduct creativity enhancement workshops for businesses, academic institutions, and other set ups ranging from IT, Technology, commodity trading, small businesses, cosmetics, NGOs and more. Creativity as evident from the articles in this collection is not restricted to arts or business. Its enhancement and subsequent application in diverse fields is key to achieving goals of equitable human sustenance.

It was an honor serving as the guest editor for this special issue of IAFOR's *Journal of Psychology & the Behavioral Sciences* dedicated to creativity. I would like to thank the editors of this journal Dr. Deborah Wooldridge and Dr. Sharo Shafaie for trusting me with this important special edition. I sincerely hope that after reading this collection, our readers will allow their actions and decisions to be inspired by creativity.

Special Issue Guest Editor **Dr Arpan Yagnik** Assistant Professor of Advertising Department of Communication Penn State University, USA publications@iafor.org

IAFOR Journal of Psychology & the Behavioral Sciences https://iafor.org/journal/iafor-journal-of-psychology-and-the-behavioral-sciences/

Does Engaging in Creative Activities Influence the Use of Coping Skills and Perception of Challenge-Skill Balance in Elite Athletes?

Veronique Richard, Florida State University, USA Yanyun Yang, Florida State University, USA Mark Runco, American Institute for Behavioral Research and Technology, USA Ahmed M. Abdulla, Arabian Gulf University, Manama, Bahrain Gershon Tenenbaum, Florida State University, USA

Abstract

The aim of this study was to test the notion that engagement in creative activity directly affects the flow state dimension of challenge-skills balance, and indirectly via coping strategies in the realm of sport. Two hundred and eight athletes classified as intermediate, advanced, and expert level were administered a Creative Activities and Accomplishment Checklist (CAAC), the Dispositional Coping Inventory for Competitive Sport (DCICS), and the Challenge-Skill Balance subscale of the Dispositional Flow Scale (CS-DFS-2). Measurement and structural equation modeling were used to test the postulated model. The best fit of the model showed that 36% of the variance in challenge-skills balance was accounted for by creative activities and task-oriented coping. The findings extend the role that creativity engagement has on flow state.

Keywords: creativity, coping skills, challenge-skill balance, sport psychology, elite athletes

Csikszentmihalyi's (1996) initial qualitative research on creativity highlighted the psychological state highly creative individuals reach when they are fully engaged in their creative process. This state called flow is commonly defined as an intrinsically rewarding experience requiring intense focus and absorption in the task at hand evoking a sense of effortless performance even when the situation is challenging (Csikszentmihalyi, 1990; Swann, Piggott, Schweickle, & Vella, 2018). Given the importance of positive affective experience for long-term participation in sport (Rhodes & Kates, 2015), facilitating the occurrence of flow is mandatory in this domain (Swann et al., 2018).

One of the conditions for flow to occur is the balance between the individual's perceived challenges and skills (Nakamura & Csikszentmihalyi, 2002). Considering the unique and unpredictable nature of sport challenges (Tenenbaum, Lane, Razon, Lidor, & Schinke, 2015), additional psychological skills may be required to achieve this state of balance (Jackman, Swann, & Crust, 2016; Swann, Keegan, Piggott, & Crust, 2012; Swann, Piggott, Crust, Keegan, & Hemmings, 2015). Interestingly, findings revealed that the accumulation of domain-related creative experiences such as frequent exposure to problem solving or creative work opportunities expand the individual's repertoire of thoughts and actions, and allow for the efficient use of coping skills (Fredrickson, 2001). Increased personal psychological resources thereby balance the level of challenge allowing athletes to feel in control under demanding sport situations (Lazarus, 1991) increasing the likelihood of reaching optimal psychological state. Unfortunately, the effects on athletes' psychological skills and states of being involved in problem solving, movements or tactics creation, and training plan design remain unarticulated (Santos, Memmert, Sampaio, & Leite, 2016). Consequently, few sport organisations promote the implementation of creativity supportive environments to foster athletes' optimal psychological development. To provide evidence supporting the relevance of implementing creative environments in the realm of sport, the aim of the present study was to explore the relationships between engagement in creative activities, use of coping strategies, and challenge-skill balance dimension of flow using the conceptual model presented in Figure 1. A theoretical explanation of this model follows along with its examination procedure.



Figure 1: The full conceptual model illustrating a direct path between creative activities and challenge-skill balance mediated by three dimensions of coping

Challenge-Skill Balance Condition

In sport, flow is commonly conceptualized in terms of nine dimensions (Jackson & Csikszentmihalyi, 1999). Three dimensions are proposed to be the conditions necessary for flow to occur (i.e., challenge-skill balance, clear goals, and unambiguous feedback) whereas the remaining six are considered as characteristics of the flow experience (i.e., action-awareness merging, concentration on the task, sense of control, loss of self-consciousness, transformation of time, autotelic experience). Recently, in an attempt to actualize the conceptualisation of flow, Swann et al. (2017) suggested that the nine-dimensions model conflates two distinct psychological states: the flow and the clutch state. Whilst sharing a range of characteristics with flow, the clutch state is more effortful, intense, consciously demanding, and happens mainly in pressure situations when an outcome is on the line.

One occurrence process that is common to both flow and clutch state is the appraisal of challenging situations. Confidence in one's ability also appears to play an influential role in the individual assessment of new challenges (Stavrou, Jackson, Zervas, & Karteroliotis, 2007; Swann, Crust, Jackman, et al., 2017). In fact, the perception of a balance between the challenge at hand and the individual's skills is considered as a core precursor for flow occurrence (Nakamura & Csikszentmihalyi, 2002). Accordingly, findings of a recent meta-analysis have shown that matching skill and challenge is strongly related with flow state (Fong, Zaleski, & Leach, 2015). Although unresolved debates still remains about which and how many conditions are necessary for flow to occur (Swann et al., 2018), the challenge-skill condition is theoretically (Moneta, 2012) and empirically well supported. Namely, the manipulation of the balance between the task and skill has successfully triggered flow in participants of several experimental studies (Keller & Bless, 2008; Keller, Bless, Blomann, & Kleinböhl, 2011; Schweickle, Groves, Vella, & Swann, 2017). The current research thus focuses on this condition that facilitate both flow and clutch states.

Creative Activities and Challenge-Skill Balance

Frequent exposure to creative activities presents a potential way to influence athletes' appraisal of challenges and skills. According to Csikszentmihalyi, flow requires "a stretching of one's self toward new dimensions of skill and competence" (1975, p. 33). By pushing individuals to explore other alternatives, creative activities enhance individuals experiences and skills repertoire (Fink & Woschnjak, 2011; Simonton, 2000). Since the appraisal of a situation is based on different memory storage, a more substantial and diverse repertoire of experiences increases the probability of retrieving similar experiences from long-term memory (LTM). When facing subsequent challenges, familiar responses in LTM are thus more accessible (Tenenbaum et al., 2009). Therefore, we argued that creative experiences might directly influence the person-environment relationship by positively affecting challenge appraisal, and consequently facilitate the balance condition necessary to reach both flow and clutch state.

Coping Skills and Challenge-Skill Balance

As athletes evolve towards excellence, they encounter an increased number of stressors (Schinke, Tenenbaum, Lidor, & Battochio, 2010). Achieving a state of balance can thus demand additional effort. According to Keller et al. (2011), high skills-demands-compatibility result in increased stress levels as indicated by relatively high levels of salivary cortisol. Although elevated challenges have been positively associated with the occurrence of both flow state (Csikszentmihalyi, 1988; Keller et al., 2011) and clutch state (Schweickle et al., 2017),

these results could have been mediated by athletes use of psychological skills to manage the stressful demands of the situation. According to the Lazarus's cognitive-motivational-relational theory (CMRT; 1999, 2000), after appraising whether the environment has the potential to endanger personal goals (*primary appraisal*), the athlete can deploy, if needed, appropriate coping skills to deal with aspects of the problem or with emotions associated with it (*secondary appraisal*). Coping skill could thus facilitate the athlete's perceived fit between challenge and skills.

Coping skills enable the athlete to invest cognitive and behavioral efforts directed to manage specific external and internal demands (Lazarus & Folkman, 1984). Various classifications of coping strategies exist (see Nicholls & Thelwell, 2010). Namely, Gaudreau and Blondin (2002) developed a model of coping in sport which includes three dimensions of coping: *task-oriented coping, distraction-oriented coping*, and *disengagement-oriented coping*. Task-oriented coping involves directly addressing the source of stress and deliberately attempting to reduce or remove the stressors. Distraction-oriented coping corresponds to strategies that can be used to direct one's attention momentarily on things that are unrelated to sport competition; whereas disengagement-oriented coping represents strategies that are used to disengage oneself from processes that generally lead to goal attainment.

Empirical evidence supports the association between coping and flow occurrence. For instance, results of a study exploring the relationship between psychological correlates and flow among 261 junior tennis players showed that athletes displaying active coping patterns (i.e., action orientation) are more likely to master the various challenges inherent in tennis competition, which is beneficial for flow (Koehn, Morris, & Watt, 2013). Similarly, athletes presenting higher flow disposition reported using more approach coping strategies to manage task demands whereas their lower flow disposition counterparts mentioned using more avoidance ones (Jackman et al., 2016). Yet, whether coping impact specifically the challenge-skill condition of flow remains unknown. Baring theoretical and empirical knowledge in mind, we hypothesized that task-oriented coping would be positively associated with challenge-skill balance dimension of flow, whereas distraction and disengagement coping would reveal a negative association.

Creative Activities and Coping Skills

Frequent involvement in creative activities could also impact the coping skills disposition. Indeed, the broaden-and-build theory (Fredrickson, 1998) stipulates that expressing one's individual creativity contributes to broadening their thought-action repertoire (Fredrickson, 2001). In this line, Nicholls, Perry and Calmeiro (2014) concluded that a wider cognitive repertoire allows athletes to create and develop new solutions in addition to building their enduring personal resources. Some evidence supports the relationship between creativity and task-oriented coping (Carson & Runco, 1999). For instance nonconformity, a personality trait underlying creativity, has been associated with increasingly frequent occurrence of task-oriented coping in male combat athletes (Bernacka, Sawicki, Mazurek-Kusiak, & Hawlena, 2016). However, the link between creative behaviors and coping disposition is underexplored. It is expected that frequent involvement in creative experience would be positively linked with task-oriented coping and negatively linked with distraction and disengagement coping.

In summary, the aim of the present study was to test the notion that engagement in creative activities directly affects the flow state dimension of challenge-skills balance and indirectly affects it via coping strategies in the realm of competitive sport. According to Csikszentmihalyi

(1975), challenge can be both triggered by the unknown of discovery and exploration or by more traditional competitions. Therefore, we argue that athletes who are frequently expose to the challenge coming from creative activities will present a higher disposition to experience a sense of balance between challenge and skills and this relationship will be mediated by a stronger disposition to use task oriented-coping. To test these assumptions, we postulated a conceptual model (see Figure 1) and tested its paths by implementing an introspective study. The measured variables were tested first for measurement integrity via confirmatory factor analyses (CFA), and upon subsequent modifications, structural equation modeling was used to determine the best model to fit the data.

Method

Participants

Two hundred and eight athletes aged between 14 to 37 years old participated in this study (M = 21.84, SD = 4.27). Considering Baker et al.'s (2015) Taxonomy of Skills in Sport, the sample was composed of 21 intermediate athletes, 73 advanced athletes, and 114 expert athletes. The sample was composed of 94 males and 114 females. All athletes were actively practicing in their respective sport daily. Seventeen different sports were represented: volleyball (n = 29), figure skating (n = 9), gymnastics (n = 1), swimming (n = 20), snowboarding (n = 7), fencing (n = 20), racquetball (n = 1), archery (n = 1), track and field (n = 2), hockey (n = 21), soccer (n = 36), badminton (n = 1), rugby (n = 8), speed skating (n = 12), ultimate Frisbee (n = 16), water polo (n = 15), and synchronized swimming (n = 9). All the athletes had been practicing in their respective sports for an average of M = 12.75 years (SD = 4.55), competing for M = 9.4 years (SD = 3.78), and were training M = 16.66 hours per week (SD = 8.70). At the time of the study, all participants trained in the province of Quebec, and spoke French and/or English, fluently.

Measures

Demographic information. A form was created asking participants to report on their gender, age, education, place of birth, and residence. In addition, participants were asked which specific sport they were engaged in, the number of years they had been practicing this sport since their initiation, as well as the number of years they were practicing it at a competitive level. They were also asked to list their best result in four different levels of competition (provincial, national, international, and Olympic). Finally, participants were required to report the average amount of time they spent training per week.

Creative activity and accomplishment checklist (CAAC; Runco, 1986; Holland, 1961). The CAAC allows obtaining very precise information about each athlete's specific creative activities and accomplishments. CAAC can be used to measure creative activities in a variety of domains (Runco, Noble, & Luptak, 1990). A CAAC sport subscale was developed for the present research. It contained 12 items, each of which requires athletes to describe the frequency of their engagement in certain creative activities related to their sport rated on a 4-points Likert-type scale ranging from 1 (*never*) to 4 (*more than five times*). As is true for all domains and scales on the CAAC, the items represent activities involving problem solving, creative production, and recognition of creative accomplishment by others (Agnoli, Corazza, & Runco, 2016) (e.g., "how often have you offered an original solution to a sport problem to others working in that field", "how often have you created something that required technical knowledge such as a new technical/artistic movement or choreography" and "how often have you designed a training plan or an exercise to test a new technique in your sport). An extensive

psychometric investigation of the CAAC was recently presented by Paek and Runco (2016). Previous studies have used CAAC revealing an alpha coefficients of .85 for reliability of the total scale (Donggun & Runco, 2016) and from .68-.86 for the various areas (Runco et al., 2016). However, we are the first study to use the sport version of the scale. Our results show that the sports version of the CAAC was reliable ($\Omega = .80$).

Since our study was conducted in an official bilingual province of Canada, the questionnaires were offered in both French and English to the participants to ensure everyone could answer in their primary language. As the original CAAC was developed in English, a structured translation/back translation process (Geisinger, 2003) was used to establish a French version of the assessment tool. To accomplish this, a bilingual sport scientist translated the questionnaire into French and a second bilingual individual re-translated the tool into English. The French items were translated in a way that maximized their linguistic and conceptual correspondence with their original English counterparts (Fournier et al., 2007). The initial translation and back-translation were compared to correct any points of divergence. CAAC was then corrected to be an accurate reproduction of the original item (Gustafsson, Hassmén, & Podlog, 2010).

Dispositional coping inventory for competitive sport (DCICS; Hurst, Thompson, Visek, Fisher, & Gaudreau, 2011). The DCICS aims at assessing the athlete's typical utilization of coping strategies within the competitive sport environment on a 5 points Likert-type scale ranging from 1 (not at all) to 5 (very strongly). It was adapted from the situational version (Coping Inventory for Competitive Sport; CICS) originally designed in French (Gaudreau & Blondin, 2002). The DCICS consists of 10 first-order subscales that are categorized into three second-order dimensions: (1) task-oriented coping (i.e., mental imagery, thought control, relaxation, logical analysis, seeking support, and effort expenditure), (2) distraction-oriented coping (i.e., distancing and mental distraction), and (3) disengagement-oriented coping (i.e., disengagement/ resignation and venting of unpleasant emotions). Previous studies that have used this scale demonstrated internal consistency reliability (Cronbach's alpha) for the 10 subscales varying between .60 - .80 (Hurst et al., 2011). Following the procedures and recommendations described by Hurst and colleagues, the DCICS was adapted in French for the current study by changing the verb tenses of the original CICS from past to present. This allows to measure typical rather than specific coping responses. In addition, two items were added to the *distancing* first-order subscale to increase the content validity of the subscale. The final version of the DCICS that was administered to the athletes in the present study thus included 41 items.

Challenge-skills dimension of flow (DFS-2; Jackson & Eklund, 2002). To assess the disposition of athlete to reach a state of balance, the challenge-skills balance subscale from the DFS-2 was used. The athlete was asked to think how often he/she experienced a sense of balance while practicing their sport using a 5-point Likert-type scale ranging from 1 (*never*) to 5 (*always*). An example item, "When participating in my sport, I am challenged, but I believe my skills will allow me to meet the challenge." The French version used in this study was derived from the valid version of the Flow State Scale Revised (Fournier et al., 2007). The instrument demonstrated good construct validity (Jackson & Eklund, 2004), and acceptable reliability of .75 in a previous study using similar population (Crust & Swann, 2013).

Design and Procedure

To test the research the postulated model and its assumptions, we used a correlational research design. After receiving University of Montreal Health Research Ethic Committee approval, the questionnaires were administered in group sessions. After being presented with brief information about the contents and purpose of the study, athletes were asked to read and sign the Consent and Information document. Thereafter, they were asked to fill out the three questionnaires followed by the demographic information form. Test sessions lasted between 25 - 30 minutes.

Results

Prior to testing the conceptual model, we examined the distribution of the observed scores for each item in the five scales comprising the model presented in Figure 1. The distributions of all items emerged to be asymmetric. Diagonally weighted least square estimation method with mean and variance adjustment was applied for conducting confirmatory factor analysis (CFA) for each of the five scales because the number of response categories was five or fewer (Finney & DiStefano, 2013). Specifically, we conducted a one-factor model for CAAC, a six-factor model for task-orientated coping scale, a two-factor model for distraction-oriented coping scale, a two-factor model for distraction-oriented coping scale, a two-factor model for challenge-skills balance scale. Analyses were conducted in Mplus 7 (Muthén & Muthén, 1998-2015). In addition to a non-significant χ^2 statistic, an adequate model-data fit was indicated by RMSEA < .08 and CFI > .950 (e.g., Yu, 2002). Fit indices from all the tested measurement models are shown in Table 1.

Creative Activity and Accomplishment Checklist

The one-factor model with 12 items fit poorly to the data. Two of the items, item 7, "participated in a sport club or organization", and item 8, "won an award for a significant contribution in your sport", loaded weakly on the unidimensional factor, and thus were removed from the scale. Although participation in extracurricular activities and external recognition are reliable indicators of creative involvement in other domains (Runco et al., 2016), these two items were not a solid representation of this notion in sport. In addition, modification indices suggested adding a residual covariance between item 6, "Used technology (video, apps) to capture an original sport idea," and item 12, "Used technology to view slow motion or superimpose sports movement." The two items are similar in content as both relate to technology use for generating creative ideas. The revised model demonstrated an adequate fit as shown in Table 1, $\chi^2(34) = 90.36$, p < .01, *RMSEA* =.089, *CFI* = .950. Standardized loadings were in the range of .32 - .77; all were statistically significant at p < .01. Coefficient omega (ω) for the sum scores across these categorical items was computed using the Green and Yang (2009) formula, $\omega = .80$.

Scale	χ^2	df	RMSEA	CFI
Creative activity	172.38*	54	.103	.901
Creative activity (revised)	90.36*	34	.089	.950
Task-oriented coping	328.77*	215	.050	.965
Distraction-oriented coping	138.02*	34	.121	.917
Distraction-oriented coping (revised)	55.09*	25	.076	.975
Disengagement-oriented coping	77.32*	19	.121	.954
Disengagement-oriented coping (revised)	26.73	18	.048	.993
Challenge-skill balance	1.55	2	.000	1.00
* < 01				

**p*<.01.

Table 1: Evaluation of the Measurement Model for Each Scale.

Task-Oriented Coping Scale

Task-oriented coping consisted of six domains. Each domain was measured by 4 items except that effort expenditure was measured by 3 items. The six-factor CFA model demonstrated reasonable fit, $\chi^2(215) = 328.77$, p < .01, *RMSEA* = .050, *CFI* = .965. The standardized loadings ranged from .42 - .90. Reliability coefficient for the entire scale was ω =.91 and ranged from .67 (logical analysis) - .86 (relaxation) for the six subscales.

Distraction-Oriented Coping Scale

Distraction-oriented coping consisted of two subdomains. The distancing subscale consisted of 6 items and the mental distraction subscale consisted of 4 items. The two-factor model yielded an unsatisfactory fit. Item 23, "I keep all people at a distance," had weak standardized loadings on the target factor and was thus removed from the model. This item was added to the DCSCI following Hurst and colleagues' (2011) suggestion to increase content validity of the distancing factor. Therefore, to our knowledge, the present study is the first to use this item for the distancing subscale. The current analysis failed to support the inclusion of this item in the scale. In addition, modification indices suggested adding a residual covariance between item 40, "I retreat to a place where it is easy to think," and item 41, "I search for calmness and quietness." Conceptually, these two items share similar content (e.g., seeking a more internal calmness), which requires to relate them. The revised model showed an adequate fit, $\chi^2(25) = 55.09$, p < .01, *RMSEA* =.076, *CFI* = .975 as shown in Table 1, the standardized loadings ranged from .43 - .89 - all were statistically significant at p < .01, and the reliabilities were: $\omega = .77$, .81, and .61 for the entire scale, the mental distraction subscale, and the distancing subscale, respectively.

Disengagement-Oriented Coping Scale

Disengagement-oriented coping consisted of two subdomains each measured by 4 items. The two-factor model for the disengagement-oriented subscale yielded an inadequate fit. Modification indices suggested adding a residual covariance between item 22, "I express my discontent," and item 32, "I express my frustrations." Both items relate to the expression of similar emotions. The revised two-factor model resulted in an excellent fit, $\chi^2(18) = 26.73$, p > .05, *RMSEA* =.048, *CFI* = .993. The standardized loadings ranged from .40 - .98, and the reliabilities were: $\omega = .78$, .77, and .70 for the entire scale, the disengagement/resignation subscale, and the venting of unpleasant emotions subscale, respectively.

Challenge-Skills Balance Scale

The challenge-skills balance scale consisted of four items. The one-factor model fitted very well to the data, $\chi^2(2) = 1.55$, p > .05, *RMSEA*= .000, and CFI = 1.00. The standardized loadings were large, and ranged between .58-.95, with $\omega = .83$.

In summary, the revised one-factor model for CAAC consisted of 10 items and one correlated residual. The revised two-factor model for distraction-oriented coping scale consisted of nine items and one correlated residual, and the revised two-factor model for disengagement-oriented coping scale consisted of eight items and one correlated residual. The originally hypothesized one-factor model for challenge-skills balance scale and six-factor model for task-oriented coping scale were successfully retained.

Structural Equation Modeling: Testing the Model

Next, we examined the conceptual model shown in Figure 1 using a structural equation model. The correlation coefficients among scores from the 12 scales/subscales along with their standard deviations are shown in Table 2. The diagonal elements are the estimated ω based on the measurement model we conducted in the previous step. The conceptual model was then tested using robust maximum likelihood estimation method. To correct for the unreliability of scale scores for each of the 12 variables, we used a single indicator for each of these 12 variables and constrained their residual variance as var(x)*(1- ω) where var(x) was the variance of the variable and ω was the corresponding reliability coefficient computed in the previous step. The model encountered improper solutions. Specifically, the standardized loading of distraction-oriented coping was greater than one, and thus removed from the model. The revised model yielded a poor fit, $\chi^2 = 86.48$, df = 31, p < .01, RMSEA = .093, and CFI = .811. We continued to test a model without the constructs of disengagement-oriented coping and distraction-oriented coping as reported next.

Scale/Subscale	1	2	3	4	5	6	7	8	9	10	11	12
1. Creative activities	(.80)											
2. Balance	.34	(.83)										
3. Mental imagery	.31	.34	(.80)									
4. Thought control	.17	.38	.50	(.79)								
5. Relaxation	.26	.18	.30	.27	(.86)							
6. Logical analysis	.26	.39	.41	.22	.32	(.67)						
7. Seeking support	.23	.15	.24	.33	.29	.36	(.72)					
8. Effort expenditure	.09	.29	.22	.20	.12	.24	.07	(.79)				
9. Distancing	.03	05	.16	.00	.12	.20	.00	01	(.61)			
10. Mental distraction	02	03	02	.15	.21	04	.18	.02	.20	(.81)		
11. Disengagement/											(.77)	
resignation	20	45	23	42	03	15	06	34	.25	.32		
12. Venting of											.23	(.70)
unpleasant emptions	07	.01	06	20	09	.22	.05	17	.09	.10		
Standard												
Deviation	6.73	2.17	3.43	3.04	3.91	3.06	3.37	1.78	3.70	3.71	2.74	3.53

 Table 2: Correlation Matrix and Standard Deviation of 12 Variables Involved in the Conceptual Model.

Model Re-Specification

In the re-specified structural equation model, the construct "creative activities" has both a direct effect and an indirect effect on balance via task-oriented coping (with 6 dimensions). This model showed an inadequate fit, $\chi^2 = 51.74$, df = 19, p < .01, *RMSEA* = .091, and *CFI* = .874. Modification indices suggested adding a residual covariance between the two dimensions of task-oriented coping: logical analysis and thought control. However, adding the residual covariance led to an out-of-boundary of the estimate of this parameter (i.e., residual correlation < -1). Logical analysis and thoughts control are considered cognitive operations used to identify and/or assess internal and external environmental demands. These strategies are used for effective coping in the form of thought restructuring (Gaudreau & Blondin, 2002). The analysis suggested that these cognitive operations act in parallel, and, therefore, only one was required to represent these cognitive processes. We decided to retain the logical analysis dimension and exclude thought control from the model because it better represents problem solving and decision-making; cognitive processes involve in creative actions. The revised model showed an excellent fit, $\chi^2 = 18.45$, df = 13, p > .05, *RMSEA* = .045, and *CFI* = .970. The path diagram along with standardized parameter estimates for this revised model is shown in Figure 2.



*p < .01. The dotted line indicates that the path coefficient was not significant, p > .05.



The standardized path coefficient from creative activities to task-oriented coping and from task-oriented coping to balance was .49 and .49, respectively; both were significant with p < .01. Therefore, the indirect effect from creative activities to balance via task-oriented coping was .24 (=.49 ×.49), p < .01. However, the direct effect from creative activities to balance (indicated by the dash line) was .18 and not significant (p > .05). The R^2 of balance was .36, meaning that 36% of the variance in balance was accounted for by creative activities and task-

oriented coping, of which 27% was attributed to the indirect effect from creative activities via task-oriented coping.

Discussion

We aimed to explore the relationship between creative experiences, coping skills, and challenge-skills dimension of flow. By testing various versions of the model, the results support the link between creative activities and task-oriented coping while excluding the link between distraction-oriented coping and disengagement coping. The final model revealed an association between task-oriented coping and challenge-skills balance. More importantly, task-oriented coping was shown to significantly mediate the relationship between creative activities and challenge-skills dimension of flow.

Our findings support the relevance of engaging in creative activities such as creating new techniques/movements, setting up experiments to test new ideas, designing training plans, or finding original solutions to sport problems in fostering athletes' optimal psychological state. The novelty and exploration required while engaging in creative activities encourage individuals to break away from set patterns of thinking (Lewis & Lovatt, 2013). Indeed, when people are used to activities involving creativity, under-used thinking pathways are stimulated and increase the activation of cognitive flexibility, fluency, and originality (Walton, 2003). This process provides athletes with new cognitive resources making them more prone to interpret unfamiliar situations as challenging rather than threatening (Nicholls et al., 2014). Since creative activities potentially influence athletes' perception of challenge, a direct effect on the challenge skill equation was expected. Yet, in our final model, creative activities only weakly related to challenge-skill balance. Most of the challenge-skill balance variance was accounted for by the mediational path of task-oriented coping, which makes this link worth further elaboration.

A study conducted by Stavrou and colleagues (2007) provides partial explanation for our results. To examine the relationship between challenge, skills, and the nine flow dimensions, these researchers separately assessed athletes' perception of challenge and skill before competition and flow state right after the event. Findings revealed that it is the athletes' perception of skill level, and not the perceived challenge of the competition, that significantly correlated with the challenge-skill balance dimension of flow. In a competitive environment, these results denote that athletes who estimate positively their abilities to manage the demands of the situation might be more prone to experience a balance between the challenge and skills, even when the challenge is fairly high. This corroborates with Lazarus's (1999) idea that perceiving stressful situations as challenging rather than threatening only initiates the adaptation process, and may not directly affect the challenge-skill balance state. The capacity of an athlete to subsequently use relevant coping skills required for dealing with these challenges is thus essential (Schinke et al., 2010) because, only then, the athlete feels a sense of balance between challenge and skill. Fostering these coping skills in athletes is thus key and our results highlighted the relevance of creative activities to achieve that purpose.

Indeed, athletes who reported engaging more frequently in sport-related creative activities exhibited a higher disposition to use task-oriented coping skills. This linkage is in accordance with the broaden-build theory assumption postulating that the pleasantness coming from expressing ones creativity broadens athlete's behavioral and thoughts repertoire; thereby initiating the use of coping skills (Fredrickson, 2001). Since creativity is associated with higher-level cognitive functions (De Dreu, Nijstad, Baas, Wolsink, & Roskes, 2012),

engagement in it may contribute specifically to the development of task-oriented coping strategies that require engagement in deep cognitive processing such as logical analysis, mental imagery, and planning (Nicholls et al., 2014). Our findings support this notion showing stronger association between creative activities and both mental imagery and logical analysis than with the remaining three behavioral task-oriented coping (e.g., effort expenditure, seeking support, and relaxation). However, the effect of engagement in creative activities on emotions as well as cognitive functions, and the use of coping strategies in the realm of sport must be substantiated experimentally along with the notion that it mediates the challenge-skills balance.

In line with our initial postulation, our results show negative associations between creative experiences and both distraction and disengagement-oriented coping and between these two coping dimensions and challenge-skills balance. However, these associations are too weak to reach significance. Therefore, there is no evidence to support the inclusion of distraction and disengagement coping in the final model. Distraction and disengagement oriented coping can be considered as avoidance strategies which involve attempts to disengage from the stressors (Hill & Hemmings, 2015). In a creative process, one must face the problem at hand and even sometimes create the problem itself (e.g., problem finding) to produce more original ideas (Runco, 2014). Therefore, athletes who are frequently involved in creative activities are less likely to develop an avoidance coping style which support the absence of significant associations between the involvement in creative processes and avoidance coping strategies.

Our analysis also revealed a negative association between distraction and disengagement coping and challenge-skill balance. These results are in accordance with Jackman et al. (2016) who showed that low flow disposition athletes used coping to alleviate the emotional consequences of the stressor rather than directly act towards it resulting in lower level of adaptability. The low disposition flow athletes also expressed being slow and ineffective in finding solutions to problem when the pressure was high. The authors concluded that avoidance coping prevent flow while approach coping promote it. Our study refines this conclusion by highlighting the impact of task-oriented coping strategies on the challenge-skill dimension of flow and the influence of creative activities as an initiator of this relationship.

Limitations of the Study

Despite the relevance of the present study, it does contain certain limitations. First, the correlational design used in the present study does not allow to infer causality. Further studies using an experimental design must develop creative activities to explore their unique effect on both the development of effective coping skills and the attainment of challenge-skills balance. Second, for the purpose of this study, the CAAC was adapted to sport from creative accomplishment and activity checklists used in other domains. Consequently, two items were loading poorly and were removed from the measurement model. Since creativity is a domainspecific construct (Baer, 2015), more effort should be devoted to develop and validate creativity assessment tools grounded in the specific sport context. Similarly, many modifications were made on the distraction and disengagement coping scales to reach an adequate fit with the measurement model. In accordance with other studies (Gaudreau, El Ali, & Marivain, 2005), the result of the present research highlights several problems with the distancing subscale. Items related to the distancing factor should thus be revised to better represent and assess the behavioral actions used to reduce or eliminate social relationships momentarily (Hurst et al., 2011). Finally, the current study focuses on the challenge skill balance process of occurrence and did not differentiate between flow and clutch state which represent the contemporary conceptualization of optimal psychological states (Swann et al.,

2018). According to Swann, Crust and Vella (2017), flow happens in a context of novelty, uncertainties and exploration whereas clutch state occur in important moment when the outcome is on the line. Future studies should thus examine the various impact of engaging in creative activities on these two optimal states. Nevertheless, the operationalization of the theoretical construct we have tested was found to be sufficient, and thus the model can be challenged in other cultures and sports. Furthermore, the model can be expanded by including other variables such as emotion and cognitive function.

Conclusion

In addition to its empirical contribution to sport and creativity literature, some implications can be drawn from these research results. In fact, more effort should be devoted by sport coaches and practitioners to implement a creativity supportive environment. Coaches can confront athletes more frequently with challenging experiences, such as being responsible to develop new methods of training aiming at improving a specific skill or overseeing the development of new movements or tactics supporting sport innovations. This way, task-oriented coping can be stimulated resulting in a more frequent experience of challenge-skills balance, benefiting the athlete's enjoyment of the overall sport experience at the same time. Unfortunately, creativity fulfillment takes time (Runco, 2004) and sport is often under constrained time pressure. However, "unless enough people are motivated by the enjoyment that comes from confronting challenges, by discovering new ways of being and doing, there is no evolution of culture, no progress in thought or feeling" (Csikszentmihalyi, 1996, p. 110). Therefore, encouraging creativity in sport seems to be a promising avenue to ensure an ongoing evolvement of the field, resulting in psychological skills and states enhancement.

References

- Agnoli, S., Corazza, G. E., & Runco, M. A. (2016). Estimating creativity with a multiplemeasurement approach within scientific and artistic domains. *Creativity Research Journal, 28*, 171–176. https://doi.org/10.1080/10400419.2016.1162475
- Baer, J. (2015). The importance of domain-specific expertise in creativity. *Roeper Review*, 37, 165–178. https://doi.org/10.1080/02783193.2015.1047480
- Baker, J., Wattie, N., & Schorer, J. (2015). Defining expertise: A taxonomy for researchers in skill acquisition and expertise In J. Baker & D. Farrow (Eds.), *Routledge Handbook of Sport Expertise* (pp. 145–155). New York: Routledge International Handbooks.
- Bernacka, R. E., Sawicki, B., Mazurek-Kusiak, A., & Hawlena, J. (2016). Conforming and nonconforming personality and stress coping styles in combat athletes. *Journal of Human Kinetics*, 51, 225–233. https://doi.org/10.1515/hukin-2015-0186
- Carson, D. K., & Runco, M. A. (1999). Creative problem solving and problem finding in young adults: Interconnections with stress, hassles, and coping abilities. *The Journal* of Creative Behavior, 33, 167–190. https://doi.org/10.1002/j.2162-6057.1999.tb01195.x
- Crust, L., & Swann, C. (2013). The relationship between mental toughness and dispositional flow. *European Journal of Sport Science*, *13*, 215–220. https://doi.org/10.1080/17461391.2011.635698
- Csikszentmihalyi, M. (1975). Beyond boredom and anxiety. San Francisco: Jossey-Bass.
- Csikszentmihalyi, M. (1988). The flow experience and its significance for human psychology. In M. Csikszentmihalyi & I. Csikszentmihalyi (Eds.), *Optimal experience: Psychological studies of flow in consciousness* (pp. 15-35). Cambridge, England: Cambridge University Press. https://doi.org/10.1017/CBO9780511621956
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal performance*. New York: Harper & Row.
- Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*. New York, NY: Harper Perennial.
- De Dreu, C. K., Nijstad, B. A., Baas, M., Wolsink, I., & Roskes, M. (2012). Working memory benefits creative insight, musical improvisation, and original ideation through maintained task-focused attention. *Personality and Social Psychology Bulletin, 38*, 656-669. doi:10.1177/0146167211435795
- Donggun, A., & Runco, M. A. (2016). General and domain-specific contributions to creative ideation and creative performance. *Europe's Journal of Psychology*, *12*, 523–532. https://doi.org/10.5964/ejop.v12i4.1132
- Fink, A., & Woschnjak, S. (2011). Creativity and personality in professional dancers. *Personality and Individual Differences*, 51, 754–758. http://dx.doi.org/10.1016/j.paid.2011.06.024
- Finney, S., & DiStefano, C. (2013). Non-normal and categorical data in structural equation modeling. In G. R. Hancock & R. O. Mueller (Eds.), *Structural equation modeling: A second course* (2nd ed., pp. 439-492). Greenwich, CT: Information Age.

- Fong, C. J., Zaleski, D. J., & Leach, J. K. (2015). The challenge–skill balance and antecedents of flow: A meta-analytic investigation. *The Journal of Positive Psychology*, 10, 425–446. https://doi.org/10.1080/17439760.2014.967799
- Fournier, J., Gaudreau, P., Demontrond-Behr, P., Visioli, J., Forest, J., & Jackson, S. (2007). French translation of the Flow State Scale-2: Factor structure, cross-cultural invariance, and associations with goal attainment. *Psychology of Sport and Exercise*, 8, 897-916. doi:http://dx.doi.org/10.1016/j.psychsport.2006.07.007
- Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*, 2, 300-319. https://doi.org/10.1037/1089-2680.2.3.300
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *The American psychologist*, 56, 218– 226. https://doi.org/10.1037//0003-066X.56.3.218
- Gaudreau, P., & Blondin, J. P. (2002). Development of a questionnaire for the assessment of coping strategies employed by athletes in competitive sport settings. *Psychology of Sport and Exercise*, *3*, 1–34. doi:http://dx.doi.org/10.1016/S1469-0292(01)00017-6
- Gaudreau, P., El Ali, M., & Marivain, T. (2005). Factor structure of the Coping Inventory for Competitive Sport with a sample of participants at the 2001 New York marathon. *Psychology of Sport and Exercise*, 6(3), 271–288. http://dx.doi.org/10.1016/j.psychsport.2004.01.002
- Geisinger, K. F. (2003). Testing and assessment in cross-cultural psychology. In I. B. Weiner (Ed.), *Handbook of Psychology*: John Wiley & Sons, Inc.
- Green, S. B., & Yang, Y. (2009). Reliability of summed item scores using structural equation modeling: An alternative to coefficient alpha. *Psychometrika*, 74(1), 155–167. https://doi.org/10.1007/s11336-008-9099-3
- Gustafsson, H., Hassmén, P., & Podlog, L. (2010). Exploring the relationship between hope and burnout in competitive sport. *Journal of Sports Sciences*, 28, 1495–1504.
- Hill, D. M., & Hemmings, B. (2015). A phenomenological exploration of coping responses associated with choking in sport. *Qualitative Research in Sport, Exercise & Health, 7*, 521-538.
- Hurst, J. R., Thompson, A., Visek, A. J., Fisher, B., & Gaudreau, P. (2011). Towards a dispositional version of the Coping Inventory for Competitive Sport. *International Journal of Sport Psychology*, 42(14),167-185.
- Jackman, P. C., Swann, C., & Crust, L. (2016). Exploring athletes' perceptions of the relationship between mental toughness and dispositional flow in sport. *Psychology of Sport and Exercise*, *27*, –65. https://doi.org/10.1016/j.psychsport.2016.07.007
- Jackson, S. A., & Csikszentmihalyi, M. (1999). Flow in sports: The keys to optimal experiences and performances. Champaign, IL: Human Kinetics.
- Jackson, S. A., & Eklund, R. C. (2002). Assessing flow in physical activity: The Flow State Scale-2 and Dispositional Flow Scale-2. *Journal of Sport & Exercise Psychology*, 24(2), 133–150. https://doi.org/10.1123/jsep.24.2.133
- Jackson, S. A., & Eklund, R. C. (2004). *The flow scale manual*. Morgantown, WV: Fitness Information Technology.

- Keller, J., & Bless, H. (2008). Flow and regulatory compatibility: an experimental approach to the flow Mmodel of intrinsic motivation. *Personality and Social Psychology Bulletin, 34*(2), 196–209. https://doi.org/10.1177/0146167207310026
- Keller, J., Bless, H., Blomann, F., & Kleinböhl, D. (2011). Physiological aspects of flow experiences: Skills-demand-compatibility effects on heart rate variability and salivary cortisol. *Journal of Experimental Social Psychology*, 47(4) 849–852. http://dx.doi.org/10.1016/j.jesp.2011.02.004
- Koehn, S., Morris, T., & Watt, A. P. (2013). Correlates of dispositional and state flow in tennis competition. *Journal of Applied Sport Psychology*, 25, 354–369. https://doi.org10.1080/10413200.2012.737403
- Lazarus, R. S. (1991). Emotion and adaptation. New York: Oxford University Press.
- Lazarus, R. S. (1999). Stress and emotion: A new synthesis. New York: Springer.
- Lazarus, R. S. (2000). How emotions influence performance in competitive sports. *Sport Psychologist, 14*(3) 229–252. https://doi.org/10.1123/tsp.14.3.229
- Lazarus, R. S., & Folkman, S. (1984). Stress appraisal and coping. New York: Springer.
- Lewis, C., & Lovatt, P. J. (2013). Breaking away from set patterns of thinking: Improvisation and divergent thinking. *Thinking Skills and Creativity*, *9*, 46–58. http://dx.doi.org/10.1016/j.tsc.2013.03.001
- Moneta, G. (2012). On the measurement and conceptualization of flow. In S. Engeser (Ed.), *Advances in flow research* (pp. 23–50). Switzerland: Springer.
- Muthén, L. K., & Muthén, B. O. (1998-2015). *Mplus user's guide* (7th Ed.). Los Angeles, CA: Muthén & Muthén.
- Nakamura, J., & Csikszentmihalyi, M. (2002). The concept of flow. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 89–105). New York: Oxford University Press.
- Nicholls, A. R., Perry, J. L., & Calmeiro, L. (2014). Precompetitive achievement goals, stress appraisals, emotions, and coping among athletes. *Journal of Sport & Exercise Psychology*, *36*(5), 433–445. https://doi.org/10.1123/jsep.2013-0266
- Nicholls, A. R., & Thelwell, R. (2010). Coping conceptualized and unraveled. In N. A.R. (Ed.), *Coping in sport: theory, methods and related constructs* (pp. 3-14). New York: Nova Science.
- Paek, S.-H., & Runco, M. A. (2016). Progress on the criteion problem: Measuring the quality and quantity of the creative activity and accomplishment. *Submited for publication*.
- Rhodes, R. E., & Kates, A. (2015). Can the affective response to exercise predict future motives and physical activity behavior? A systematic review of published evidence. *Annals of Behavioral Medicine*, 49(5), 715-731). https://doi.org/10.1007/s12160-015-9704-5
- Runco, M. A. (2004). Creativity. *Annual Review of Psychology*, 55, 657–687. https://doi.org/10.1146/annurev.psych.55.090902.141502
- Runco, M. A. (2014). *Creativity: Theories and themes: research, development, and practice* (2nd ed.). San Diego, CA: Academic Press.
- Runco, M. A., Acar, S., Campbell, W. K., Jaeger, G., McCain, J., & Gentile, B. (2016). Comparisons of the creative class and regional creativity with perceptions of

community support and community barriers. *Business Creativity and the Creative Economy*, 2, 83–92. https://doi.org/10.18536/bcce.2016.10.2.1.08

- Runco, M. A., Noble, E. P., & Luptak, Y. (1990). Agreement between mothers and sons on ratings of creative activity. *Educational and Psychological Measurement*, 50, 673–680. http://dx.doi.org/10.1177/0013164490503025
- Santos, S., Memmert, D., Sampaio, J., & Leite, N. (2016). The spawns of creative behavior in team sports: A creativity developmental framework. *Frontiers in Psychology*, 7, 1–14. https://doi.org/10.3389/fpsyg.2016.01282
- Schinke, R. J., Tenenbaum, G., Lidor, R., & Battochio, R. C. (2010). Adaptation in action: The transition from research to intervention. *The Sport Psychologist*, 24, 542–557. https://doi.org/10.1123/tsp.24.4.542
- Schweickle, M., Groves, S., Vella, S. A., & Swann, C. (2017). The effects of open vs. specific goals on flow and clutch states in a cognitive task. *Psychology of Sport & Exercise*, *33*, 45–54. https://doi.org/10.1016/j.psychsport.2017.08.002
- Simonton, D. K. (2000). Creativity. Cognitive, personal, developmental, and social aspects. *The Americain psychologist, 55*, 151–158. https://doi.org/10.1037//0003-066X.55.1.151
- Stavrou, N. A., Jackson, S. A., Zervas, Y., & Karteroliotis, K. (2007). Flow experience and athletes' performance with reference to the orthogonal model of flow. *Sport Psychologist*, 21(4), 438–457. https://doi.org/10.1123/tsp.21.4.438
- Swann, C., Crust, L., Jackman, P., Vella, S. A., Allen, M. S., & Keegan, R. (2017). Psychological states underlying excellent performance in sport: Toward an integrated model of flow and clutch states. *Journal of Applied Sport Psychology*, 29(4), 375-401. https://doi.org/10.1080/10413200.2016.1272650
- Swann, C., Crust, L., & Vella, S. A. (2017). New directions in the psychology of optimal performance in sport: flow and clutch states. *Current Opinion in Psychology*, 16, 48-53. https://doi.org/10.1016/j.copsyc.2017.03.032
- Swann, C., Keegan, R. J., Piggott, D., & Crust, L. (2012). A systematic review of the experience, occurrence, and controllability of flow states in elite sport. *Psychology of Sport and Exercise, 13*, 807–819. http://dx.doi.org/10.1016/j.psychsport.2012.05.006
- Swann, C., Piggott, D., Crust, L., Keegan, R., & Hemmings, B. (2015). Exploring the interactions underlying flow states: A connecting analysis of flow occurrence in European Tour golfers. *Psychology of Sport and Exercise*, 16, 60–69. http://dx.doi.org/10.1016/j.psychsport.2014.09.007
- Swann, C., Piggott, D., Schweickle, M., & Vella, S. A. (2018). A Review of Scientific Progress in Flow in Sport and Exercise: Normal Science, Crisis, and a Progressive Shift. *Journal of Applied Sport Psychology*, 30(3), 249–271. https://doi.org/10.1080/10413200.2018.1443525
- Tenenbaum, G., Hatfield, B. D., Eklund, R. C., Land, W. M., Calmeiro, L., Razon, S., & Schack, T. (2009). A conceptual framework for studying emotions–cognitions–performance linkage under conditions that vary in perceived pressure. In M. Raab, J. G. Johnson, & R. H. Hauke (Eds.), *Progress in Brain Research* (pp. 159-178). London: Elsevier.

- Tenenbaum, G., Lane, A., Razon, S., Lidor, R., & Schinke, R. (2015). Adaptation: A twoperception probabilistic conceptual framework. *Journal of Clinical Sport Psychology*, 9, 1–23. https://doi.org/10.1123/jcsp.2014-0015
- Walton, A. (2003). The impact of interpersonal factors on creativity. International Journal of Entrepreneurial Behaviour & Research, 9, 146–162. https://doi.org/10.1108/13552550310485120
- Yu, C.-Y. (2002). *Evaluating cutoff criteria of model fit indices for latent variable models with binary and continuous outcomes.* UCLA, Unpublished Dissertation.

Corresponding author: Veronique Richard **Email:** vrichard2@fsu.edu

Rewarding Creative Problem Solving and Expectations for Creative Motives, Competence and Satisfaction of Workers During Critical Incidents

Fomba Emmanuel Mbebeb, The University of Bamenda, Cameroon

Abstract

There is growing interest in creativity and innovation at work, and the role of reward types in creative problem solving dispositions of workers in organizations. However, extending creative performance to problem resolution during critical incidents remains a virgin ground pending exploration. This study examined employees' perceptions of creativity rewards and effects on creative motive, competence and feelings of satisfaction. Participants were 50 and a reliable instrument was used to determine the opinions of respondents. Descriptive analysis, bivariate correlation and regression were applied for data analysis. According to results, nonmaterial reward significantly predicted intrinsic creative motive of workers while material reward significantly determined extrinsic creative motive. Analysis also reported that nonmaterial reward significantly predicted creative competence of employees. While non-material and material rewards significantly predicted satisfaction of employees, material reward by contrast failed to predict satisfaction. It is evident that intangible and tangible incentives determined creativity dimensions though at varying directions and degrees. Findings also supported theories used in explaining rewards and creative behaviors. Discussion is centered on creative and innovative culture, and how the use of reward types can improve creative responses at critical incidents. Furthermore, expansion of investigations on incentive types and creative behaviors has been suggested.

Keywords: creativity, rewards, motivation, competence, satisfaction, critical incident

Introduction

The increasing importance of creativity and innovation at work provides a powerful impetus for performance, competitiveness and sustainability of enterprises. Since creativity is the production of novel and useful ideas by workers (Amabile, 2012; Charness & Grieco, 2018), creative problem-solving is necessary during routine assignments and critical in face of critical incidents. Creativity in products, services, procedures, and processes is now more important than ever, and highly needed in established enterprises and new ventures (Seratt, 2009). In a changing and highly competitive knowledge economy, ideas are sources of competitive edges considering that knowledge and technologies are products of creativity. With creative performance, ideas are transformed into new products, services and approaches in order to spur performance and beat competitors, while resolving emerging organizational demands. There are success stories testifying the effectiveness of creative approaches in making organizations more achievable, and managing creativity has therefore become a complex business (Tan, 1998). This is even more complicated and delicate when resolving intricate issues that are risk prone during critical incidents. In order to effectively manage creativity in the work place, understanding the factors that predict creative performance is a priority (Da Silva et al., 2010). In this respect, the strength of contextual and organizational factors such as rewards has been acknowledged in creativity management. Human resources drive creativity and innovation business of any enterprise, and this goes with reward packages as any other task of the enterprise. If employees deserve rewards during routine activities, creative problem solving has to be highly compensated particularly during critical incidents. Wang & Holahan (2017) explained that all innovations depend on creative work, which produces new and useful ideas, and motivating a creative workforce is an important concern for business organizations. This requires an organizational culture that values innovation, where there is encouragement for personnel to think differently, take calculated risks, and challenge the status quo (Serrat, 2009). A culture of reward for creativity is capable of motivating workers into creative problem solving and such incentive plans can extend creative behaviors to the arena of critical incidents. Organizational culture influences employees thinking, feelings and actions, and provides meaning, direction, and mobilizes employees into respective task assignments (Tan, 1998).

Considering that critical incidents have to be transformed into gains and not losses, some organizations have encouraged creative culture to engineer creative values at turning points through reward packages. This is why motivating creative workers may need different strategy as compared to general employees (Chan, 2017). In this respect, non-material and material packages have been put in place by some employers to catalyze creative performance. The demands and deployment of cognitive resources at unusual occurrences necessitates employee workplace responses, and this is exigent on employees' creative work behavior. Therefore, employees need to be motivated in order to deploy versatile to handle diverse challenges, and creative competence cannot be underrated in the processes. These are responses to possible disasters, imminent danger and losses at work, which are compelling on management. In the study it was expected that creativity rewards would be translated into creativity relevant behaviors capable of resolving challenges of critical incidents.

Creativity is indispensable to develop new products, improve customer services systems and operational strategies (Tan, 1998), and this is more exigent with critical incidents. This is why the exploration of intangible and tangible reward schemes target creative behaviors during stressful and unexpected events. The study used the Componential Theory of Creativity (Amabile, 1983), which describes the creative process and influences on the process and its outcomes. Among the four components necessary for any creative enterprise, the role of

context and rewards in particular has been isolated to explain creative behaviors. The twofactor theory (Herzberg et al., 1959; Herzberg; 1966) is equally used to explore factors that affect creativity motivation of employees. The model strongly upholds that hygiene factors lead to neutral state of motivation, satisfaction and performance, while motivator factors produce a high state of motivation, satisfaction and performance. Drawing from observation and extant literature, the present study attempts to portray the role that creativity rewards can play in certain outcome measures (creative motives, competence and satisfaction). General expectations hold that innovative culture of the institution will promote creativity dispositions of employees. Recognizing that people who generally approach their work with an intrinsic orientation may be more consistently creative than people who adopt an extrinsic orientation (Amabile, 1997), the study projects a relationship between non-material rewards and intrinsic creative motive (Da Silva, Borlongan-Conway & Tokunaga 2010; Liu, Jiang, Shalley,, Keem, & Zhou, 2016). Recognizing that intrinsic motivation alone is incapable of ensuring creative performance, the paper argues that extrinsic factors are instrumental in creativity, and key links have been observed between material rewards and extrinsic creative motive (Chan & Ma, 2017; Sipa, 2018). This implies that high expectations of intrinsic creative motive are dependent on non-material rewards, while that of extrinsic creative motive will be derived from material rewards. Traditional work learning does not focus on resolving the mysteries of critical incident and individuals involved require positive attitudes, critical thinking and creative skills to acquire gains and prevent losses. This expresses the need for creative competence in order to effectively realize creative work behaviors and innovations. This requires prompt analysis, reorganization and transfer of knowledge, and motivation to energize and sustain creative work behaviors, which often suffer from moderating factors such as risk, pressure, anxiety and loss perception. The promotion of creative patterns in the enterprise expects that non-material rewards should correlate with creative competence (Awan & Zamir; 2016; Hon, 2012) in the process of knowledge production. Interest and emphasis is on the exploration of socially relevant skills that can achieve creativity within the context of creative culture. Satisfaction is a personal feeling that one derives from the job, and which is capable of increasing employee performance (Shawn, 2017), and creativity drives cannot be oversighted. It is obvious that reward for creativity should be able to engender employee satisfaction, but this is not the case in all situations. In this respect, Sacchetti and Tortia (2011) explained that the need to express one's own creativity depends on individual desires and satisfaction. The assumption holds that a correlation exists between creativity rewards and satisfaction, since satisfaction has been perceived as a key factor in creative performance. It is therefore expected that this measure of performance will be predicted by the independent variables of the study. Though reward cues are capable of facilitating creative behaviors and ensuring positive feelings that workers desire from creative ventures, the desired feelings have to be supported by incentive schemes.

Managing Critical Incidents Through Creativity Rewards

Interest in creativity during critical incidents at work, though necessary in facilitating routine occupational challenges, is crucial in resolving sudden, unexpected and anxiety-provoking happenings. In 2000 the Irish National Teachers' Organization (INTO) & Ulster Teachers' Union (UTU), explained that incidents become critical when they overwhelm the usual coping capacity of individuals and organizations, involving an intense threat to life, health, property, security, values or integrity. Most often the controversy surrounding creativity and performance is on the line of action that deserves creativity reward during routine assignments and during emerging situations, and when and how to administer the incentives. At best, critical incident is due some reward since creative performance is equally dependent on mental and physical exaction. Critical moments demand situation analysis, determination of the nature of

the problem, and prompt definition of solutions (Prayer, 1993). Responses require creative thinking because solutions are not obvious as there is no original solution to open-ended challenges. This implies intense cognitive manipulations such as perception, learning, retention, attention and imaging of the problem situation. The challenges could be based on anything from issues connected with individual working environment or habits to bigger and general issues such as the next great idea, product or service for the organization (Byron, 2006). Therefore, critical incidents require a sound mental status capable of producing novel solutions to emerging problems, and this is the challenge faced by most workers. In the process of creative performance, human resource systems should ensure that staff has diverse thinking or learning styles necessary in generating a variety of perspectives for a single problem (Sarett, 2009). Moreover, a creative and innovative culture provides an enabling environment for personnel to develop decision making skills and advance possible alternatives during the emergency. This reiterates the notion of a creative working climate which stimulates innovation, creativity and change within a company (Yee et al., 2014), and proper drives and competence need to the properly harnessed to manage unexpected work related events.

Managing the unexpected to improve creative performance has been a big challenge to workers, and management in some companies has responded special incentives to move their creative behaviors. But it should be noted that management of creativity varies and different organizations deploy different approaches to manage creativity (Tan, 1998). Surmounting these challenges is possible with positive critical incidents that make significant contributions to the organization, as well as those that sound negative but prevent losses to the company. This is a very difficult situation considering that negative critical incidents are stakes to be handled instantly and diligently, thereby demanding much cognitive resources. In addition, critical incidents generate emotional discomforts such as stress, and possibly cognitive disorientations. The critical nature of the incident depends on past and current experiences as well as the perception and coping skills of those involved in solution search (INTO & UTU, 2000). This suggests that the role of individual differences should be recognized, and areas of disparities isolated and threated for complementarity in creative performance ventures. Making a decision is always delicate and risky, and this requires coping skills to reduce stress in the process of creative problem solving. This is why Chan & Ma (2017) contended that creative performances are crucial and in order to maximize employees' creative performance, appropriate motivation is indispensable to maximize expression of creative behaviors. Although non-monetary rewards are often found to be positively related to creativity (Wang & Holahan, 2017), material and non-material incentives has been acknowledged as capable of facilitating creativity performances during unexpected and stressful occupational challenges. The central goal of this paper is to examine rewards being administered in organizations and expectations on creative motives, competence and satisfaction of workers during critical incidents. The role of context in the expression of creativity depositions has been given focus attention. An institution with a creative and innovative culture having reward strategies for creative performance in local context has been isolated for the investigation.

The Question of Rewards and Creative Dispositions In-Context

The Higher Institute of Management Studies (HIMS), Buea, Cameroon, appears a dynamic organization with people and production oriented culture. The enterprise upholds that a culture of innovation can make a great difference between success and failure in a highly competitive business environment. As a result, it has developed inbuilt innovative values in its structures and operations that allow for free thinking and creativity. Furthermore, it builds on the firm belief that creative performance of employees is crucial in helping creative organizations to

stay competitive in the transformation process (Chan & Ma, 2017). Apart from routine assignments, human resources policy and practices promote creative problem-solving, which is highly rewarded at all levels of operations. Moreover, the enterprise is characterized by a flat structure, where titles and other status distinctions tend to be downplayed, and this gives a feeling of importance to all staff as active contributors. Employees do not have bosses per say in the traditional sense, and risk taking is encouraged by accepting both successes and failures, particularly during critical incidents. Employees are encouraged to take risks by bringing in new ideas and designing projects in order to experiment them and remain very competitive in the market. HIMS pays a high price for developing the human capital base as an invaluable resource in creativity and innovation. Workers are subjected to learning strategies that build their potentials to accept challenges and creatively resolve emerging problems and they became physically and psychologically involved. Motivating employees' creative performance is quite a popular topic in the management of behaviors in organizations (Chan & Ma, 2017), and this has not escaped that attention of the enterprise. HIMS practices a reward system that embraces emerging demands of employees with some packages reserved creative problem solving during critical incidents. Apart from appreciations and petty cash awards, car and building assistance have been heavy awards for surmounting critical incidents. Though the enterprise considers awards are compensation for efforts at crisis resolution, it is also a proactive strategy to spur creative performance. Precisely this award is provided to workers who distinguish themselves in crafting solutions in the form of initiatives, creativity, invention and innovation.

There are many organizational factors that affect creativity and innovation, but the present study questions if reward for creative performance can facilitate creative problem solving during critical incidents and in addition generate positive feelings. The introduction of rewards to the staff of HIMS is evident with the belief that non-material rewards are capable of fostering intrinsic creative motives (Binnewies & Gromer, 2012; Liu et al., 2016). This is shown in the institution through training, appreciations and medal awards with the understanding that such packages constituting psychological rewards can activate intrinsic creative motives of employees during critical incidents. The question of material rewards being administered to the staff of the institution as a motivator to creativity has also been subjected to debate. Considering that creativity should be highest when an intrinsically motivated person with high domain expertise, and skill in creative thinking works in an environment high in supports for creativity (Amabile, 2012), the question is whether material rewards can influence extrinsic creative motives at critical incidents. Needs satisfaction of workers in the enterprise goes with extrinsic demands in terms of salaries, 13th month pay, snacks, evaluation, housing and fuel allowances. They are designed to spur performance, and this is consistent with some reports (Chan & Ma, 2017; Charness & Grieco, 2018; Sipa, 2018) that tangible reward is a catalyst to extrinsic creative motives.

The intrinsic-extrinsic incentive controversy has some bearing on the Two-Factor Theory (Herzberg et al., 1959; Herzberg, 1966), that "hygiene factors" influence neutral state of motivation and "motivators" attract high state of motivation. The present interest is whether material rewards and non-material rewards can respectively influence extrinsic and intrinsic creative motives. Creativity at all levels depends on competence and enterprises have been very conscious of the role knowledge and skills play in creative problem solving. Considering that non-material rewards are perceived as capable of determining creative competence of employees (Awan & Zamir, 2016; Hon, 2012; Kolibačova, 2014), it is still very skeptical if intangible packages administered to staff will enhance their creative performance following administration of incentive packages, and it has been argued that non-material and material

rewards determine satisfaction (Sarwar & Abugre, 2013; Yee et al., 2014). In order to reinforce work behaviors, variables that influence satisfaction have been identified, observations show that positive feelings depend on both material and non-material incentives. Despite the fact that physical and psychological factors relate with employees' job satisfaction and productivity (Sarwar & Abugre, 2013), it is still ambiguous to see clearly if workers are satisfied with intangible and tangible incentives, and whether it can facilitate creative problem solving behaviors to handle critical incidents.

Although some studies have examined the effect of reward on creativity, the question of results on dimensions of effects remain controversial (Eisenberger & Byron, 2011). Though some studies have shown that inducing intrinsic rewards increases creativity, others have not, thereby raising mix feelings about the types of rewards/incentives that can effectively determine dimensions of creative performance in organizations. However, the present study attempts to resolve some of the controversies. Drawing from the foregoing debates, it is expected that rewards being administered to employees will predict creativity dispositions of workers during sudden and unexpected occurrences.

Conceptual and Theoretical Framework

The section starts by exploring the concept of creativity within the context of problem solving at work. It operationalizes the concepts and variables in the way that they will be used in the conduct of the research study.

Conceptual Orientation

Creativity has been perceived as a complex construct which makes it rather difficult to define though consistent concepts are found across existing definitions (Zhang & Gheibi, 2015). Raju (2017) defined creativity as the ability to bring something into existence and this is distinguished by novelty, originality and invention. Creativity as a cognitive resource comprises the fundamental functioning of human information processing, which is new and appropriate in the process of problem solving. In terms of work, Amabile (2012) defined creativity as the production of a novel and appropriate response, product, or solution to an open-ended task, which must be appropriate to the task to be completed or the problem to be solved. Creativity is closely related to the idea of innovation, which is the successful implementation of creative ideas within an organization (Amabile & Pratt, 2016). A key characteristic is that creativity response must be useful to the task in question and not just any response. In problem-solving, such novel and unexpected drives often respond to emerging challenges such as critical incidents at work. Creative-thinking skills determine how flexibly and imaginatively people approach problems (Serrat, 2009), and this demonstrates the usefulness of creativity in problem solving at work. Such processes lead to products, ideas, procedures and discussions that are original and useful and the process is associated with ideas, imagination, inspiration, intuition and ingenuity (Amabile, 2012; Byron, 2006). They are all referred to as cognitive resources that are necessary in inspiring creative ventures in different occupation endeavors. Creative-relevant processes include cognitive skills that are conducive to taking new perspectives on problems and personality characteristics that lead the individual to take risks and eschew conformity (Amabile & Pratt, 2016). For instance, risk-taking describes the impulse to find and try original ideas, to go beyond ones' familiar boundaries of knowledge and explore new possibilities rather than staying in the relative security of what we already know (Byron, 2006). This suggests that individual, environmental and situational factors are essential factors in ensuring creativity in the workplace.

The concept of creative problem-solving starts with the understanding of a problem. Arkeya & Faruk (2017) defined problem as any event or situation, unforeseen, unwanted in any project or job which needs to be addressed and resolved before it becomes too complex. At work problems abound, resulting from deficiencies in relationship with people and task, drawing in responses from problem solving. Problem solving is the key competence used in handling changes, uncertainties and surprises in all situations where there is no routine response at hand (Csapó & Funke, 2017). Problem solving and decision making, though at times used interchangeably, are just closely related concepts because decision making is a problem solving activity. Furthermore, creative problem solving is a problem solving technique that creatively addresses a problem in a new way because the problem in question is a new experience. It is a self-directed cognitive and behavioral process of discovery and solution creation for emerging problems in different occupational domains and requires profound and divergent thinking. Recognizing that the ability to creatively solve a problem is often seen as an essential skill for individuals to succeed in today's world (Wieth & Burns, 2014), problem solving skills are critical in any action at work, and crucial during critical incidents.

The concepts of material and non-material rewards have been expanded to different directions with varying meanings. Material rewards generally refer to concrete immediate benefits designed to activate, energize and control behaviour, and this is often in terms of money, food, allowances and other fringe benefits. Although Omazić, Vlahov & Klindžić, (2011) defined material reward in terms of incentives directed toward securing and improving financial status of employees, the present paper extends material rewards to tangible non-financial incentives. Material rewards do not only involve money or cash but extends to vehicles, office space and medical expenses. They are also known as extrinsic motivators, and appear to be very important to individual's desire to work, particularly when available provisions are capable of satisfying felt needs. Omazić et al. (2011), further classified rewards into direct material gains such as salary system and other material incentives comprising salary, bonuses and incentives, fees for innovation and improvement, rewards for spreading the knowledge and flexibility. They extend to indirect material gains which are not received directly in form of wages and money (scholarships, tuition fees, study tours, trainings, paid absence and free days, official car and managerial benefits). Nevertheless, human needs are not necessarily material and justifying the use of non-material rewards in creativity management. Although the purpose of nonmonetary rewards is to increase quality and speed of decision making and opportunities at work, the general interest is the motivating employees to solving problems (Omazić et al., 2011). It is argued that they are not less than material reward and these packages, which nonmaterial and non-cash incentives capable of driving workers towards need satisfaction. This is evident with the use of praises, attention, training and medal award.

The concept of creative motive is built from that of motivation, and refers to an urge that moves any individual into action with the emergence of a need that requires satisfaction. It has a close tie with the concept of agency since the desires realize any creative work performance depends on the willingness of the employee. Intrinsic motive refers to the drive associated with actions that are inherently interesting and enjoyable, while extrinsic motive refers to the act of doing something because it leads to a separable outcome (Ryan & Deci, 2000). Motivation is important in all creative endeavors being initiated and carried out by the employee. Despite the understanding that intrinsic motivation has been observed as highly instrumental in promoting creativity, the combination of both intrinsic and extrinsic motives are relevant to creative ventures. People are said to be intrinsically motivated to engage in a particular task if they view their task engagement as motivated primarily by their own interest and involvement in the task (Amabile, 1997). This explains the drive towards creativity and how it relates more with intrinsic than extrinsic motivation, but not undermining the power of extrinsic drives in goal attainment.

Creative competence is a core value and very essential in achieving creativity and innovative outcomes. To Kolibačova (2014) competence refers to the whole of individual abilities, skills, behaviors and knowledge, oriented to effective performance in a given work setting. This implies intellectual resources and technical knowledge capable of transforming challenges into novel situations or products. Creative competence is a special form of competence where the solution to a problem relies on the creativity of the solution behaviour. It implies a combination of skills (knowledge, skills and attitude) necessary for employees to work in a new way to ensure creative performance, and this can be affected by reward schemes of an enterprise. An individual's skill level may also help to facilitate creative performance in the organization (Hon, 2012), and this is why creative competence is becoming topical in business organizational processes. In the process, new skills and behaviors are applied to explore novel products, ideas, styles or techniques as responses to challenges emerging from strategic objectives of an enterprise.

Job satisfaction is one of the most important variables in organizational behavior and defined as the general attitude, positive feelings and emotions which employees view their work (Sarwar & Abugre, 2013; Yee et al., 2014). It is an affective and cognitive variable that refers to assessment of level of positive feelings derived from the tasks, relationships and work environment of the employee. The understanding of satisfaction is quite subjective and depends on the experiencing subject. In this way, the nature of the job and match with evolving desires and attitudes is evaluated on the employee's terms in relation to a sense of accomplishment at work, rather than on a particular action which may have been identified as creative by managers or experts (Sacchetti & Tortia, 2011). Job satisfaction has been perceived as a favorable situation towards the working environment (Raju, 2017), and this justifies the relationship between creative problem solving rewards and job satisfaction of employees. Job satisfaction is associated and measured from different dimensions, and currently measured in terms of creativity rewards.

Theoretical Framework

Amabile (1983) proposed the componential theory of creativity to describe the creative process and the various influences on the process and its outcomes. The theory assumes that there exists a continuum from low, ordinary levels of creativity found in everyday life to the highest levels of creativity found in significant inventions, performances, scientific discoveries, and there are degrees of creativity in the work of any single individual. The theory specifies that creativity requires a confluence of all components and this is comprehensively useful for organizational creativity (Amabile, 2012). In this theory, four components have been proposed for any creative enterprise. This first three are within the individual:

- (1) Domain relevant skills refers to expertise in the relevant domain or domains where the problem solver is working.
- (2) Creativity-relevant processes refer to cognitive and personality processes conducive to novel thinking such as cognitive style and personality characteristics associated with independence, risk-taking, skills in generating ideas and taking new perspectives on problems.
- (3) Intrinsic task motivation refers the motivation to undertake a task or solve a problem because it is interesting, involving, personally challenging, or satisfying rather than
undertaking it out of the extrinsic motivation arising from contracted-for rewards, surveillance, competition, evaluation, or requirements to do something in a certain way, and,

(4) The social environment in which the individual is working, which is outside the individual. The theoretical foundation has been very much useful in the stream of organizational behaviour (Zhang & Gheibi, 2015), and this is relevant in the analysis of creative problem-solving behaviors and they could be transformed within the realms of critical incidents. From the orientation of the theory, all workers involve in creativity behaviors at all times, and this is often observed in domain-specific activities. Creative problem solving is dependent on intrinsic drives and organizational support through reward schemes are highly recommendable in promoting creative enterprise at work.

The Two-factor theory (Herzberg et al, 1959; Herzberg, 1966) has been used to understand the dynamics of rewards and creativity. The theory attempts to explain the factors that affect motivation and satisfaction of employees at work. Based on their famous survey, they observe that employees describe satisfying experiences in terms of factors that were intrinsic to the content of the job itself. The Critical-Incident Method was used to gather data on positive or negative experiences at work, and trends were found between what were termed hygiene factors and motivator factors (Shawn, 1917). "Motivators" included variables as achievement, recognition, work itself, responsibility, advancement and growth. Conversely "dissatisfying experiences", derived from "hygiene" factors were mainly from extrinsic, non-job related factors such as company policy, co-worker relations, salary, supervisory styles. The theory argued that eliminating the causes of dissatisfaction through hygiene factors will not result in a state of motivation and satisfaction, but in a neutral state. Motivation and satisfaction would occur only as a result of the use of motivators. The theory concludes that hygiene factors lead to neutral state of motivation and satisfaction, while motivator factors engender a high state of motivation and satisfaction. The Two-Factor theory has been perceived as one of the most important theories of motivation (Shawn, 1917), and this has been used in the current study to explain reward as antecedents of creative performance. The understanding is that motivator factors could significantly relate with creative problem solving while hygiene factors undermine and at times frustrate creative performances.

Expanding Literature on Reward and Creative Performance

The present section reviews literature bearing on the relationship between rewards, creative problem solving and satisfaction of workers. Although creativity is a key factor in performance, there has been much interest in the determinant of the cognitive resource, though some researchers have acknowledged the strength of intrinsic rewards in promoting creativity at work. Da Silva et al. (2010) reported that learning goal orientation was positively related to creative performance, while avoiding goal orientation was negatively related to creative performance. Generally, goal orientation gives a good sense of direction to the organism in terms of any occupational challenge, and solutions are obvious necessitating intrinsic creative actions. Liu et al. (2016) found that intrinsic rewards, creative self-efficacy, and pro-social motivation predicted creativity, and that the predictors functioned differently as mediators between contextual and personal factors and creativity. Awan & Zamir (2016) found that empowerment and self-esteem significantly related with employee creativity in the private sector. It is evident that intrinsic values influence creativity of workers in organizations. Furthermore, Lapėnienė & Dumčienė (2012) discovered that subjective creativity, goal internalization motivation, intrinsic instrumental drives had positive relationships with creativity, although only goal internalization motives predicted worker's creativity. In another

study, Chan & Ma (2017) showed that recognition, praises and verbal appreciation of employees' abilities were able to determine creativity. Sipa (2018) observed that freedom to come forward with new solutions and a culture of continuous learning positively related with creativity. Although creativity has not been distinct into intrinsic and extrinsic in the foregoing studies, the basic understanding is that non-material rewards have a close relationship with extrinsic creativity motivation. It is therefore feasible that intrinsic packages are expected to relate significantly with creative motives of employees during critical incidents in local context.

Despite the fact that literature on the relationship between monetary rewards and creativity is scarce, some related works have been reviewed. Chan & Ma (2017) observed that salary and commission significantly influenced creativity. In the same vein, Sipa (2018) reported financial motivators as being more important than non-financial since financial motivation achieved a higher score in predicting creative performance. Charness & Grieco (2018) equally realized that creativity was higher with closed task with the introduction of extrinsic incentives, indicating the effectiveness of financial incentives on close tasks. They further observed that monetary incentives (piece rates and bonuses) worked well when tasks are coined with reasonable clarity. Of interest to these results is the fact that employees were able to work better and produce something new with the introduction of hygiene factors.

Although most conceptualization and theories recognize intrinsic motives as determinants of creative motives, monetary rewards have a say in creative behaviour of employees. Some studies have equally reported moderate results between material incentives and creativity behaviour. Wieth & Burns (2014) found that material incentives led to increase in problem solving in a single task condition, but the incentive was unable to increase problem solving success in multitasking. This means that the strength of hygiene factors depends on the nature of the creative task. Despite the absence of local literature, hygiene factors cannot be underrated in encouraging creative problem solving ventures.

Some research activities have investigated creative competences factors in organizations (Da Silva et al., 2010), and the role of reward has featured in some of the studies as predictors. Hon (2012) examined employees' perceptions of competency based pay and relationship with creativity, and competency based pay (reward for knowledge and reward for skill) were able to predict creativity. Awan & Zamir (2016) also realized that employee empowerment and selfesteem positively and significantly associated with competence. In addition, the need for power moderated the relationship between competency based pay and employee creativity. Anyway, these are all intrinsic factors, though they were found to be predictors of creative competence. Some insignificant relationships were reported between intrinsic rewards and creative competence of workers. This is the case of Kolibačova (2014) who found that employee competency was independent of rewards being administered to them. This implies that the reward package was insensitive, and consequently unable to influence competence of employees. This was a single study and the reward system of the enterprise might have moderated creative competence of the participants. It is evident that motivator factors have shown significant relationships between non material reward, and it is expected that this will be translated into creative competence at resolving critical unexpected turnouts.

Some studies have tested the relationship between rewards and satisfaction of workers, and some tangible and intangible incentives have been assessed. Sacchetti & Tortia (2011) revealed that satisfaction for creativity was supported at organizational level by teamwork-oriented action, including the quality of processes, relations and on-the job autonomy, and this was

enhanced by the strength of intrinsic and socially oriented motivations. Sarwar & Abugre (2013) observed that material rewards induced positive job satisfaction of employees, and that job satisfaction of employees stimulated their loyalty. However, a very high level of employee dissatisfaction was recorded for employee pay and the amount of work they were required to perform. Yee et al. (2014) discovered creative organizational climate as an important predictor of job satisfaction and work performance, and that managers play an important role in creating working environments that promote creativity. It was observed that factors that could create a creative climate in their organizations need to be encouraged and those that inhibit creative climate eliminated to increase overall job satisfaction and performance in the organization. Meanwhile, Raju (2017) found that a high and positive relationship existed between teacher creativity and job satisfaction. This expressed a dire need to create better environment to enhance quality and creativity among the workers, and the institution of relevant reward schemes has been perceived as a viable option. Although a few studies explored the relationship between material rewards and satisfaction, it is assumed that material incentives administered to workers will equally affect satisfaction of employees to display creative performance during critical incidents.

Theoretical Model and Hypothesized Relationships

Building on the componential theory of creativity and the two-factor theory of motivation, the study explored the relationship between the operational frameworks of rewards and creativity motivation, competence and satisfaction of employees within the context of creativity and innovative culture. Drawing from literature, it is hypothesized that non-material rewards will lead to an increase in the level of intrinsic creative motive, and that increase in material reward will predict a corresponding increase extrinsic creative motive. The study also expects that non-material rewards will affect creative competence of employees, while both material and non-material rewards will predict a significant relationship with satisfaction of workers. The study tests a model that positions the perception of predictor variables as determinants of creativity, motivation, competence and satisfaction of employees during critical incident, and therefore proposes the following hypotheses:

- 1. Non-material creativity reward will have a significant effect on intrinsic creative motive of employees
- 2. Material creativity reward will have a significant effect on extrinsic creative motive of employees
- 3. Non-material creativity reward will have a significant effect on creative competence of employees
- 4. Non-material and material creativity rewards will have a significant effect on satisfaction of employees

Methodology

In order to test the relationship between non-tangible and tangible rewards on creative problem solving dispositions, employees were recruited from the Higher Institute of Management Studies (HIMS), Buea, Cameroon. These workers have enjoyed reward packages for creative performances, and have either benefited or witnessed critical incident awards. Sample constituted 50 workers (37 males; 15 females). Most participants were holders of Master's Degree (46.0%), followed by First degree (20.8%) and Doctorates (8.0%), while 25.2% were non graduates. The study was a case study and simple random sampling was used in data gathering. Out of 69 questionnaires distributed, 50 were returned giving 74.62% response rate.

With regards to instrumentation, a self-report inventory was used to measure employee perceptions of reward, creative motive, creative competence and satisfaction. The subscale for non-material reward had six items, (α =.869), and measured recognition and appreciation for publications, creativity, invention, initiatives, creative problem solving and innovative practices. Sample questions: "Provision of training to staff" and "Appreciation of creativity by staff." That of material reward had seven items (α =.701), and explored service vehicle, fuel allowance, social insurance, daily snacks, medical expenses, performance award and remuneration. Sample question: "Provision of building assistance to staff" and "Health assistance to workers." The sub scale for intrinsic creative motives had five items (α =.618), and measured enjoyment of work, interest, achievement, love and autonomy. Sample questions: "I enjoy creative actions" and "I like bringing new solutions to problems." Subscale for extrinsic creative motive comprised eight items (α =.832), and measured approval, allowances, lodging assistance, car award, building award and scholarship. Sample questions: "I am creative to have more allowances" and "I am creative to win building assistance." The subscale, creative competence, 6 items (α =.82), explored risk taking, responsiveness, interest, efforts, aptitudes, and talent. Sample questions: "I like taking risk on the job" and "I am responsive to emerging problems." The Generic Job Satisfaction scale, Macdonald and MacIntyre (1997), was adopted, 10 items (α =.888), comprising workplace affect and affective reactions. Sample items, "I receive recognition from my job" and "I feel close to the people I work with." In sum, the instrument was considered as reliable with an aggregate alpha of .788. The variables were measured using 5-point Likert scale ranging from 1= strongly disagree, 2=disagree, 3= neutral, 4= agree to 5= strongly agree. Permission to carry out the study was requested and authorization granted to the investigator by the authority of HIMS. Consent was sought and questionnaire was administered to volunteer employees. The inventory was selfadministered and employees were requested to fill them according to their perceptions. Incomplete questionnaires were discarded. Data were entered into SPSS, and descriptive and inferential statistics used to test expectations.

Descriptive Results of Study

Results of means, standard deviations, and correlation have been presented in Table 1. Nonmaterial reward positively related with material reward (r=.404, p < .01), intrinsic creative motive (r = .342, p<.05), extrinsic creative motive (r=.380, p<.01), creative competence (r=.453, p<.01) and satisfaction (r=.414, p<.01). Material reward significantly related with intrinsic creative motive (r = .488, p < .01), extrinsic creative motive (r = .491, p < .01), creative competence (r=.350, p<.05), while the relationship with satisfaction was insignificant (r=.258, p>.05). Furthermore, intrinsic creative motives correlated significantly with extrinsic creative motives (r=.569, p<.01), creative competence (r=.319, p<.05), and satisfaction (r =.423, p< .01). Although the relationship between extrinsic creative motive was insignificant with creative competence (r=.080, p>.05), it was significant with satisfaction (r=.499, p<.01). Nonetheless, creative competence correlated significantly with satisfaction (r=.387, p<.01). It would be noted that the relationships were generally positive and significant at p < .01, indicating a moderate degree of association among the variables. On account of the nature of relationships, it is feasible that reward types are expected to affect changes on dimensions of creative performance, and satisfaction. Means, standard deviations and reliability coefficients have been presented.

Variables	Mean	Std.D.	α	1	2	3	4	5	6
Non material reward (1)	25.36	4.22	.869	1	.404**	.342*	.380**	.453**	.414**
Material reward (2)	28.18	4.39	.701	.404**	1	$.488^{**}$.491**	$.350^{*}$.258
Intrinsic creative motive (3)	20.16	3.10	.618	.342*	$.488^{**}$	1	.569**	.319*	.423**
Extrinsic creative motive (4)	29.96	6.10	.832	$.380^{**}$.491**	.569**	1	.080	.499**
Creative competence (5)	27.37	2.55	.820	.453**	$.350^{*}$.319*	.080	1	.387**
Satisfaction (6)	40.02	7.14	.889	.414**	.258	.423**	.499**	.387**	1
	1 0.0			•					

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Table	1:	Biv	ariate	correla	ation	and	descri	ptives

Testing Expectations of the Study

The study investigated the perceived strength of creativity rewards on creative motives, creative competence and satisfaction of employees. Firstly, the study explored the relationship between non-material reward and intrinsic creative motive, and results of simple regression presented in Table 2. According to analysis, non-material reward significantly predicted intrinsic creative motive of employees, β =.342, R²⁼.117; t=2.523, P=.015. Non-material reward was able to determine the variation in intrinsic creative motive of workers at 11.7%, with the understanding that a one-unit increase in non-material reward will lead to one-unit increase in intrinsic creative motives (b-value= .251). Consequently, the hypothesis is accepted, confirming non-material reward as a significant determinant of intrinsic creative motive.

Model	Predictor	R	\mathbb{R}^2	Adj.	F	В	SE	β	t-	Р.
	(Reward)			R^2	value			-	values	Values
Model 1	Non material	.342	.117	.099	6.365	.251	.100	.342	2.523	.015

Table 2: Predicting intrinsic creative motive

The second assumption predicted that material creativity reward will have a significant effect on extrinsic creative motive of employees, and results are presented in Table 3. Material reward significantly predicted extrinsic creative motive, β =.491, R²⁼.241; t=3.904, P=.000. As expected, results indicated that material reward was able to influence the variation in intrinsic creative motive at 24.1%. The b-value (.251) suggested that a one-unit increase in material reward will lead to a corresponding increase in intrinsic creative motive of workers. Therefore, the hypothesis that the predictor has a significant influence on the outcome measure is confirmed, and can inform creative problem solving during critical incidents.

Model	Predictor	R	\mathbf{R}^2	Adj.	F	В	SE	β	t-	P.
	(Reward)			\mathbb{R}^2	value			-	values	Values
Model 1	Material	.491ª	.241	.225	15.242	.683	.175	.491	3.904	.000

T 11 0	D 1' '		, •	, •
Table 3	Predicting	extrinsic	creative	motives
rable J.	reducing	CAUMBIC	cicative	mouves

The relationship between non-material reward and creative competence was tested and results presented in Table 4. Analysis revealed that non material reward significantly determined creative competence of employees, β =.453, R²⁼.205; t=3.445, P=.001. The independent variable was able to determine the variation in the outcome measure at 20.5%, and projected that an increase in the predictor variable (B-value .683) will lead to a corresponding increase in creative competence. Consequently, the alternative hypothesis of a significant relationship was accepted.

Model	Predictor	R	\mathbb{R}^2	Adj.	F	В	SE	β	t-	Р.
	(Reward)			\mathbb{R}^2	value				values	Values
Model 1	Non material	.453ª	.205	.188	11.871	.281	.081	.453	3.445	.001

Table 4: Predicting creative competence

In the fourth hypothesis hierarchical regression was performed to examine the effect of nonmaterial and material creativity reward on satisfaction as expected by employees, and results presented in Table 5. In the first model, non-material reward predicted satisfaction of employees, β =.414, R²⁼.171; t=3.146, P=.003. Thus, the independent variable was able to predict 17.1% of the variation in the outcome measure. In the second model non-material and material rewards (β =.108, R²⁼.425; t=2.567, P=.014) accounted for the variation in satisfaction of workers at 42.5%. But material reward failed to predict satisfaction, β =.108, t=.748, P=.458. It was evident that a significant relationship exists between non material rewards and satisfaction, but not between material rewards and satisfaction.

Predictors	Unstan	Unstandardized		Standardized		t	Р			
(Rewards)	Beta	a (B)		Bet	a (β)					
	Step 1	Step 2		Step 1	Step 2					
Non material	0.699	-	0.222	0.414	-	3.146	.003			
Non material		0.625	.244		.370	2.567	.014			
Material	-	0.176	.235	-	108	.748	.458			
Step 1: $^{R2=}$ 0.414; Adj. $^{R2=}$ 0.171; Sig. F = 0.003; F-value = 9.900; satisfaction; $p < 0.01$										
Step 2: ^{R2=} 0.425; Adj. ^{R2=} 0.181; Sig. F = 0.458; F-value = .560; satisfaction; $p > 0.05$										

Table 5: Regressing rewards on satisfaction

Discussion

This study explored the predictive powers of creative problem-solving reward on creative motives, competence and satisfaction of workers with creativity rewards. Firstly, results supported the proposition that non-material creative problem-solving rewards can determine intrinsic creative motive of employees. Findings are consistent with previous studies on learning and goal orientation, goal internalization motivation, intrinsic process motivation and instrumental drives (Da Silva et al., 2010; Lapėnienė & Dumčienė, 2012), initiatives and idea generation (Binnewies & Gromer, 2012), and creative self-efficacy and pro-social motivation (Liu et al., 2016). Although current results do not build directly on non-material reward and intrinsic creative motive, they are relevant because the dimensions of extrinsic and intrinsic creative motives have hardly been assessed. In addition, these are indicators that motivator factors can be instrumental in promoting intrinsic creative motive. Despite the fact that prior investigations were conducted out of the present context, results still suggest that intangible rewards can predict intrinsic creative motive in a local context. It is evident that employees are expected to perform creative assignments during critical incidents because of interests, challenges and drive for achievement and not necessarily due to tangible rewards.

Analysis confirmed material reward as a predictor of extrinsic creative motives, suggesting that employees will be extrinsically motivated when administered concrete material rewards. This holds true with research by Wieth & Burns (2014) where material incentives led to increase in extrinsic creative competence. Furthermore, prior investigations on material reward system (Awan & Zamir, 2016), tangible rewards (Chan & Ma, 2017) and financial motivators (Charness & Grieco, 2018; Sipa, 2018), support the present results. Although dimensions of material and physical rewards have been a controversial factor in intrinsic creative motives, the present investigation projects material reward as a powerful determinant of intrinsic creative motives. This implies that the more material rewards are provided the more workers will be extrinsically motivated towards creative performance. Given the present findings, managers who desire to promote creative problem solving need to design packages, and enforce practices that can enhance creative motives of employees.

The third hypothesis on the relationship between non-material rewards and creative competence was confirmed, and it became evident that the administration of motivation factors will significantly predict creative competence of employees. This is consistent with the works of Sipa (2018) on non-financial motivators, and Chan & Ma (2017) on recognition, praises and verbal appreciation positioned as predictors of competence. Furthermore, it agrees with Awan & Zamir (2016) on empowerment, self-esteem with self-determination and competence, and Hon (2012) on competency-based pay. However, the results contrast the results of Kolibačova (2014) where reward packages failed to influence competence of participants. Generally, employees known for creative competences are high in preference for intrinsic rewards, though the needs for economic rewards for subsistence purposes often moderate creative competence in in local contexts. But at the same time workers can develop competence as a result of intrinsic rewards and later on change inculcate extrinsic values with high expectations through socialization with reward systems and practices. This agrees with Omazić et al. (2011) that material rewards are very important to employees, but are susceptible to changes towards nonmaterial incentives with changes in the environment. It is probable that as a result of expectations drawn from compensation packages of HIMS, workers feel that it is necessary to develop their competences in order to act creatively during critical incidents, and perhaps attract heavy tangible rewards in return. This is justified by the fact that in HIMS, innovative culture practices are highly rewarded with hygiene factors, and this appears to have raised very high expectations among employees.

One aspect of creativity reward outcome that has not been addressed in literature is satisfaction derived from creativity rewards during problem solving, particularly at critical incidents. Analysis confirmed the influence of material and non-material rewards on satisfaction of employees, though material incentives as a variable failed to induce positive feelings towards creativity reward. Results are consistent with prior investigations on organizational support, teamwork-oriented action relations, autonomy satisfaction (Sacchetti & Tortia, 2011; Sarwar & Abugre, 2013) and creative organizational climate as predictor of job satisfaction (Raju, 2017; Yee et al., 2014). It has been acknowledged that non-material rewards are more relevant than material rewards with regards to satisfaction of employees. Despite the powerful material packages introduced in the reward system, they are not able to satisfy the workers. Perhaps this may be due to the fact that very few people obtain the reward. Despite the invaluable nature of intrinsic motivators, material compensation and incentives are directed toward securing and improving financial status of employees and financial compensation for work (Omazić et al., 2011), and should be reinforced with motivator factors at all times.

Implications of the Study

This study set out to analyze creativity rewards and its relationship with creative motives, competence and positive feelings obtained from reward packages and if this can be translated to creative performance during critical incident. Results have both theoretical and practical implications. The study reinforces existing theories explaining creative performance and

relationships with outcome measures. Moreover, the relevance in context of the componential theory of creativity and the two-factor theory of motivation are evident. The study proved that outcomes in terms of creative motives, competences and satisfaction were truly affected by varying dimensions of reward. Non-material rewards significantly predicted intrinsic creative motives of workers and this suggest that motivator factors should be reinforced by the organization such that workers should have better meaning in work and enjoy creative challenges. The reward system of the institution should concentrate on intrinsic rewards, which are capable of generating intrinsic motives with regards to creative performance. This goes with the recognition that the social environment can have a significant effect on that person's level of intrinsic motivation at any point in time and the level of intrinsic motivation can, in turn, have a significant effect on that person's creativity (Amabie, 1997). The beauty and cost effectiveness of non-material rewards and intrinsic creative motives lies in human capital, and attracts no extra material cost as is the case with extrinsic incentives. This agrees with Wang & Holahan (2017) that creative performance can be influenced by the level of selfdetermination and intrinsic interest. The significant relationship between non material reward and extrinsic creative motives suggests that the more the enterprise employs motivators, the more creative the workers in handling sudden and unexpected problems at work.

Material creativity rewards truly influenced extrinsic creative motives of employees, indicating the importance of hygiene factors. The tendency that extrinsic incentive begets extrinsic motivation is shown with significant results between tangible rewards and extrinsic motive. Considering that there is room for creativity in all jobs, extrinsic incentives are necessary. It should be recalled that although intrinsic motivation is clearly an important type of motivation, most of the activities people do are not, strictly speaking, intrinsically motivated (Ryan & Deci, 2000). This "means-end" notion suggests that the enterprise has put in place exciting material rewards to spur workers face challenges of critical incident. It is possible that this has conditioned the perceptions of creative performance by workers as a means to attract material benefits, but this may draw from the practices of the organization due to express need for subsistence. The danger with extant material incentives is that when once the rewards are no longer available, creative performance may automatically extinct unlike psychological rewards. Consequently, material rewards should be administered with caution, and should not at any time undermine reinforcement from relevant immaterial incentives.

Results also suggested that intrinsic rewards were instrumental in influencing creative competence of employees. As mentioned in the study, non-material creativity rewards predicted creative competence of employees. Since workers cannot perform effectively on native ability, identifying factors that affect attitude, knowledge and skills of workers is indispensable. Although the relationship between material reward and creative competence was not assessed, recommendable intrinsic measures should be put in place to influence creative competence of employees. The critical nature of competence is seen in the fact that employees are able to carry out the work in responsible and effective manner in the process of creating impressive performance (Kolibačova, 2014), and this is a viable facility in creative problem solving. Results show that creative competence of workers is a function of the employee's psychological needs and enterprises need to be creative in administering non material rewards as a measure of competence development. Employee competences are used in a number of ways, and though training and development has been recognized, reward strategies can make a difference.

Feeling positive at work is good business and a core factor in occupational health and job performance. A good working environment is a key factor in creating job satisfaction (Yee et

al., 2014), and the reward systems and administration very essential. Although employees were satisfied with the combination of material and non-material creativity rewards, they equally indicated their dissatisfaction with material rewards as a measure of creative performance. This is expected to affect positive feelings towards creativity rewards during critical incidents. This expresses a need to review the colossal material rewards that are being administered to deserving workers at the end of the year. It should be recalled that only a few workers benefit from this award, and the gap between normal creative incentives and the award is too wide. It is therefore essential for the enterprise to creatively propose intrinsic reward packages that can lead to ulterior benefits for majority of staff. In terms of implementation, much should be done to introduce non-material and material rewards as factors in achieving satisfaction. But particular interest should be given to fostering intrinsic values as a strategy to influence positive feelings and attitudes, which will go a long way to improve intrinsic creative performance of workers.

Conclusion

Creativity is indispensable in realizing organizational goals and there is a dire need for workers to be more creative in order to meet the competitive demands of a changing workplace. But considering the constraint of organizational resources, researchers and managers are eager to know which mechanisms are most useful for boosting employee creativity (Liu, 2016). According to conventional wisdom, creativity is something done by creative people (Amabile, 1997), and this is what the making of creative workers is critical in creative problem solving. It has been argued that although individual factors determine creativity, environmental factors, particularly organizational factors, can influence creativity of workers in any job situation. Among other factors rewarding creative performance constitutes a viable measure of promoting creativity among workers at critical incidents. The evidence that intrinsic creative rewards relates significantly with intrinsic creative motivation implies that intrinsic values need to be harnessed and promoted in organizations to inform intrinsic creativity and innovation. Therefore, rewards are invaluable factors in innovation and change, and should be properly administered to catalyze intrinsic motivation. Critical reflection is important because as the focus of business becomes more customer-service oriented, workers must be able to conceptualize products, services, and consequences of their own role in the product service process (Prayer, 1993). More and more, employees at all levels have challenges to deal worth uncertainty, to revise task and to anticipate unfamiliar problems and develop a higher level of conceptual skills and this can be encouraged by sensitive reward systems and practices. If the working environment in both physical and psychological sense enables and encourages workers to be creative then they can bring in higher level solutions to problems of the organization (Byron, 2006). Despite ongoing debates, there are evidences that both intrinsic and extrinsic motivations play different roles in activating and energizing varying creative behaviors of employee in contexts. Managers should therefore recognize that employees' creative performance outcomes at critical incidents could be attributed to both motivators and hygiene factors, though at varying interests and directions.

Limitations and Future Directions

Although the study has provided some useful insights into creative performance during critical incidents, limitations abound for obvious reasons. Due to the relatively small number of respondents, and the fact that it is a case study of a single enterprise, generalization of findings need to be done with caution. Secondly, the study uses basic creativity rewards, and indirectly infers outcome on creative problem solving during critical incidents, which may not adequately

translate outcomes on the ground to critical incidents. The theories are relevant in context, but investigation studies should be carried out to expand the scope of analysis of the componential theory of creativity and two factor theory for necessary practicability. It is therefore recommend that an expansion of the study in future, using many organizations in different sectors is very relevant. Nonetheless, the strength of material and nonmaterial rewards in predicting extrinsic and intrinsic creative motives in their individual capacities will clarify who is who in determining what type of creativity drive and competences.

References

- Amabile, T. M. (1997). Motivating creativity in organizations: On doing what you love and loving what you do. *California Management Review*, 40(1), 39–58. https://doi.org/10.2307/41165921
- Amabile, T. M. (2012). Componential theory of creativity. Working Paper No. 12-096, April 26. Harvard Business School, Harvard University, Cambridge, Massachusetts
- Amabile T. M & Pratt, M. (2016). The dynamic componential model of creativity and innovation in organizations: Making progress, making meaning, *Research in Organizational Behaviour*, 35, 157–183, 157–183. https://doi.org/10.1016/j.riob.2016.10.001
- Arkeya, P. & Faruk, B.P. (2017). Problem Solving Approach, International Journal of Advanced Engineering Research and Science, 4(5), 184–189. https://doi.org/10.22161/ijaers.4.5.29
- Awan, A. & Zamir, A. (2016). Impact of empowerment, reward system and self-esteemed on employees' creativity. *Global Journal of Management and Social Sciences*, *2*(2), 47–58.
- Binnewies, C. & Gromer, M. (2012). Creativity and innovation at work: The role of work characteristics and personal initiative. *Psicothema*, 24(1), 100–105.
- Byron, K. (2006). Creative Problem-Solving, retrieved on 23/09/18 at, https://www.ttu.ee/public/i/infotehnoloogia.../Byron Creative Problem Solving.pdf
- Csapó, B. & Funke, J. (2017). The development and assessment of problem solving in 21stcentury schools, In Csapó, B. & Funke, J., *The Nature of Problem Solving: Using Research to Inspire 21st Century Learning*, Paris: OECD Publishing
- Chan, Y. & Ma, H. (2017) The perceived effective motivation methods in china's creative industries: the managerial perspective, 3rd Asia Pacific Conference on Contemporary Research (APCCR- 2017), Kuala Lumpur, Malaysia
- Charness, G. & Grieco, D. (2018). Creativity and incentives. *Journal of the European Economic Association*, 17(2), pp. 454–496. https://doi.org/10.1093/jeea/jvx055
- Da Silva, N., Borlongan-Conway, M. D. & Tokunaga, H. (2010) Employee goal orientation in relation to creative performance. *Review of Management Innovation & Creativity*, 94–102. SJSU ScholarWorks
- Eisenberger R. and Byron K. (2011) Rewards and Creativity. In: Runco M.A. & Pritzker S.R. (eds.). Encyclopedia of Creativity, Second Edition, vol. 2, (pp. 313–318), San Diego: Academic Press.
- Hon, A, H. Y. (2012). When competency-based pay relates to creative performance: The moderating role of employee psychological need. *International Journal of Hospitality Management*, 31,130–138. https://doi.org/10.1016/j.ijhm.2011.04.004
- Kolibačova, G. (2014). The Relationship Between Competency and Performance, *Acta* Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 62(6), 1315–1327.
- Lapėnienė, D. & Dumčienė, A. (2012) Peculiarities of teachers' motivation to work creatively, *Intellectual Economics*, 6(3/15), 355–364.

- Liu, D., Jiang, K., Shalley, C. E., Keem, S. & Zhou, J. (2016). Motivational mechanisms of employee creativity: A meta-analytic examination and theoretical extension of the creativity literature, *Organizational Behavior and Human Decision Processes*, 137, 236–263. https://doi.org/10.1016/j.obhdp.2016.08.001
- Macdonald, S and MacIntyre, P (1997). The generic job satisfaction scale: Scale development and its correlates. *Employee Assistance Quarterly*, *l3*(2) 1–16. http://dx.doi.org/10.1300/J022v13n02 01
- Omazić, M. A., Vlahov, R. D. & Klindžić, M. (2011). The role of material and non-material rewards in reducing barriers to change acceptance. *IPED*, 2, 10–14.
- Prayer, F. (1993). Critical reflectivity learning theory: Implications for the workplace. *PAACE Journal of Lifelong Learning*, *2*, 43–48.
- Raju, T. J. M. S. (2017) Relationship between teacher creativity and job Satisfaction. *International Education & Research Journal*, 3(6), 176–178.
- Ryan, R. M. & Deci, E.L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions, *Contemporary Educational Psychology*, 25, 54–67. https://doi.org/10.1006/ceps.1999.1020
- Sacchetti, S. & Tortia, E.C. (2011). Satisfaction with creativity: A study of organizational characteristics and individual motivations. WP No. 9, Department of Economics, University of Trento, Italy.
- Sarwar, S. & Abugre, J. (2013). The influence of rewards and job satisfaction on employees in the service industry. *The Business & Management Review*, 3(2), 22–32.
- Serrat (2009). Harnessing creativity and innovation in the workplace. Cornel University ILR school, international document, 9-2009, Cornell university, USA.
- Shawn, A. (2017) Assessing job satisfaction using Herzberg's Two-Factor Theory: A qualitative study between US and Japanese insurance employees. *IAFOR Journal of Business & Management*, 2(1), 22–35. https://doi.org/10.22492/ijbm.2.1.02
- Sipa, M. (2018). The factors determining the creativity of the human capital in the conditions of sustainable development, *European Journal of Sustainable Development*, 7(2)1– 13. https://doi.org/10.14207/ejsd.2018.v7n2p1
- Tan, G. (1998). Managing creativity in organizations: A total system approach. *Creativity* and Innovation Management, 7(1), 23–31. https://doi.org/10.1111/1467-8691.00082
- Irish National Teachers' Organization & Ulster Teachers' Union (2000) when tragedy strikes: guidelines for effective critical incident management in schools, retrieved on 12/09/18 at https://www.into.ie/ROI/Publications/WhenTragedyStrikes.pdf
- Wang, K. & Holahan, P. J. (2017). The effect of monetary reward on creativity: The role of motivational orientation. Proceedings of the 50th Hawaii International Conference on System Sciences
- Wieth, M. B. & Burns, B. D. (2014.) Rewarding multitasking: Negative effects of an incentive on problem solving under divided strention, *Journal of Problem Solving*, 7, 60–72. https://doi.org/10.7771/1932-6246.1163
- Yee, W. F., Pink, L. S. & Sern, M. L. C. (2014). The effect of a psychological climate for creativity on job satisfaction and work performance. *Int. Journal of Economics and Management*, 8, 97–116.

Zhang, P. & Gheibi, S. (2015). From intrinsic motivation to employee creativity: The role of knowledge integration and team psychological safety, *European Scientific Journal*, 11 (11) 380-392

Corresponding author: Fomba Emmanuel Mbebeb **Contact email:** fombaem@yahoo.com

Creative Cognition: Conceptual Blending and Expansion in a Generative Exemplar Task

Brian J. Birdsell, Hirosaki University, Japan

Abstract

Creativity is a multifaceted and complex human trait that allows one to generate and explore unlimited novel ideas and artifacts. One method to study creativity is to use a creative cognition approach (Finke, Ward, & Smith, 1992; Smith, Ward, Finke, 1995; Ward, Smith, & Finke, 1999), which examines the cognitive processes and structures that lead to the generation of creative ideas. Participants in this study were asked to draw and describe a creature on a distant planet, similar to a prompt used by Ward (1991). Results suggest that the participants relied on what has been termed, structured imagination (Ward, 1994, 1995), or a repertoire of existing knowledge that constrains the production of imaginative ideas. Five responses were then selected for deeper analysis to show how two cognitive processes, conceptual blending (Fauconnier & Turner, 2002) and conceptual expansion, are used to blend and expand known concepts in order to produce a novel idea. This paper discusses implications this research has for theories of creativity and its real world applications, as well as its importance for educational objectives.

Keywords: creativity, structured imagination, conceptual integration, blending

Introduction

"*Nil posse creari de nilo*" Lucretius stated before the Common Era that nothing is created from nothing and this applies to creativity in the modern sense. Creative ideas do not suddenly or magically appear to the individual, but are imagined, crafted, and developed through one's knowledge structures. Two common ways to creatively explore an idea is through conceptual integration and conceptual expansion. In this paper, I illustrate these two processes through analyzing a set of journal writing prompts that asked student participants to draw and describe a creature on an imaginary planet. Responses show the combinatorial ability of blending known concepts together in new ways where novel ideas emerge and the process of elaborating and magnifying known structures. The work presented here uses two theoretical frameworks from the cognitive sciences for understanding these thought processes, namely creative cognition (Finke, Ward, & Smith, 1992) and Conceptual Integration Theory (Fauconnier & Turner, 2002).

Creative Cognition Approach and the Role of Structured Imagination

In the creative cognition approach to creativity, Finke et al. (1992) coined the term, the Geneplore model, which is a portmanteau of the words generate and explore. This blended word emphasizes the interplay between the generative process of producing many ideas (to use their term, *preinventive structures*) with varying creative potential and the exploratory process that judges these initial candidate ideas and then expanding, modifying, and interpreting them.

Some of these generative processes that have been identified include simplistic and often automatic processes like retrieval and associative mechanisms to more complex and richer varieties like mental synthesis, conceptual combination, and mental transformation. During this generative phase, *preinventive structures* might be created and one type of these is a mental blend, which they describe as referring to "a class of structures that include conceptual combinations, metaphors, and blended mental images" (Finke et al., p. 22). For the purposes of this paper, I focus mainly on conceptual combinations and blended mental images that fuse two distinct concepts into a new and emergent entity. According to this model, properties such as novelty, ambiguity, incongruity, as well as meaningfulness, enhance creativity in these preinventive structures since they are commonly held properties that are representative of creativity (see Boden, 2004; Koestler, 1964). For instance, incongruity, which requires a certain semantic distance between the two concepts, allows for a greater possibility of new meanings to emerge and thereby making creative discovery more likely (Wisniewski, 1997). Novelty and meaningfulness may seem on one level contradictory, but innovative ideas involve novelty that allows for the recoverability of the familiar (Giora, 2003). That is to say, there has to meaning within the novelty or it is more likely anomalous than creative. In sum, during this generative phase, preinventive structures are possibly created, one type being a mental blend that develops from combining concepts or blending mental images together that are novel, semantically distant, but still meaningful. From these candidate preinventive structures, an exploratory process ensues. This process may include attribute finding, conceptual interpretation, functional inferences, and contextual shifting with the goal of discovering emergent and meaningful insight from these generated ideas.

The cognitive resources available to combine, analogize, and blend requires having a repertoire of existing known concepts and categories. The impact this existing knowledge has on the process of imagined entities is referred to as *structured imagination* (Ward, 1994, 1995). In short, creative ideas are heavily structured by existing concepts and this prior knowledge

constrains and limits these creative ideas. For instance, Ward (1994) asked participants to imagine, draw, and describe novel animals that might exist on an imaginary distant planet and the results showed that these imaginary animals possessed characteristics similar to earth animals (i.e., sensory organs: eyes, ears, nose; appendages: arms, legs; and bilateral symmetry). In a follow-up study, Ward and Sifonis (1997) found similar results, despite the fact that participants were explicitly instructed to make these animals wildly different from animals found on earth. Therefore, when tasked with a generative problem like the one above, knowledge from existing known concepts and categories (i.e., animals) are projected onto these newly generated exemplars. In essence, the ability to generate a creative idea begins with known concepts. In order to make the mental leap from these known and familiar concepts to novel and creative ones, this paper examines two possibilities, generating *conceptual blends*, which produce an emergent entity from two or more established concepts, or some form of conceptual expansion (Ward, 1994; Ward, Smith, & Vaid, 1997) whereby the boundaries of a given concept are elaborated on in novel ways in order to develop a newly crafted exemplar. Conceptual blends have attracted much attention in the field of cognitive science and this paper utilizes one influential theory, Conceptual Integration Theory, as a way to model these generative processes.

Conceptual Integration Theory: An Analysis of Blending for Creativity

Conceptual Integration Theory (CIT), at times referred to as blending theory, developed primarily from the work of Fauconnier and Turner (2002; see also Birdsell, 2014 for a summary). Their analysis of creative blends borrows from and expands earlier theories of creativity most notably Koestler's (1964) model of creative thinking, which he termed "bisociation". Bisociation is the bringing together or fusing of two matrices of thought (which refer to frames of references or associative contexts) where new and emergent meaning arises often from conflicting information. His aim was to distinguish this creative act as something different than the pedestrian "associative" style of thinking. Associative thinking is the habitual linking of routine knowledge from experiences in life (e.g., cloudy – rain) that have accrued over long periods of time.

Bisociation requires multiple matrices. A matrix, in CIT, is closely related to what Fauconnier and Turner (2003) called a "mental space", which is a small conceptual packet constructed as we think and talk. A mental space is an associative packet of information constructed as we think and thus creative ideation often involves the mapping of two or more (as in bisociation) of these conceptual spaces together. Elements and structure from these two "input" mental spaces fuse together in a "blended space" resulting in new and emergent structure. This new meaning is not the sum of the two input spaces for it did not exist in either space independently, but arose from the combinatorial process of blending. In CIT, an additional "generic space", which is a highly abstract and topological space, is also used in order to show the elements and structure that are shared between the two input spaces. Although CIT is used to analyze thinking in general, it is also especially useful for modeling the thought process of creativity. Creativity typically utilizes the mental operation of conceptual blending called double-scope networks (or multiple-scope networks). The inputs in these types of networks are often clashing for they use different organizing frames and the blend includes parts from each frame and thus the emergent structure in the blend can be highly creative and challenging to the imagination (Fauconnier & Turner, 2002).

The field of advertising often makes extensive use of creative visual blends, typically in the form of pictorial and multimodal metaphor types (see Forceville, 1996; Forceville & Urios-

Aparisi, 2009 for more examples) in order to grab viewers' attention and cognitively engage them with the content of the advert. Consider the following advert for donating clothes (Figure 1).





This advert creatively fuses a human conceptual space with a moth's and recruits encyclopedic knowledge we have for both of them. For instance, in the human input space, clothes are garments worn by people and sushi is a gastronomic delicacy. In the moth input space, clothes that are not frequently worn by humans are food, which results in tension or a clash in structure between these two organizing frames. This integrated network is illustrated in Figure 2 with these two input spaces, the generic space, and the blended space. In the blend, clothes, as garments worn by humans, and as food for moths are blended together. Features (rolled, as in a sushi roll) and attributes (viewed as a delicacy) from the food input space 1 are projected into the blend, so the food from input space 2, as in clothes, takes on these features and attributes. One likely assumes based on the context of the advert that the intended interpretation is for people to take heed and donate clothes not frequently worn before they become a delicacy for moths.



Figure 2: A conceptual integration model of the "Don't let your clothes turn into food for moths: Donate" advert

This is a creative example of a conceptual blend with the aim of firstly grasping the viewer's attention and secondly persuading the viewer to donate unneeded clothes. The world of advertising frequently uses such creative techniques for rhetorical purposes of persuasion. In this paper, in contrast, I aim to examine how student participants develop and produce visual and textual responses to an ill-defined prompt that requires them to creatively generate and explore possible ideas "on the fly". Then using the before mentioned theories, creative cognition and CIT, I analyze the cognitive processes of coming up with these novel responses.

Exemplar Generation: Imagining Life on a Distant Planet

Method

In order to examine the creative process, student participants (n=34) in an advanced English writing class were asked to generate an exemplar of a living creature on an imaginary planet as part of a writing assignment. This prompt was similar to the one used in the study by Ward (1991). Below is the one used in this study:

Imagine a planet that exists somewhere else in the galaxy that is different to earth in size, terrain, and climate. Imagine and draw an animal that lives on this planet. Describe the diet, habitat, sensory-organs, and appendages of the creature and provide any other information or details you feel important in describing this creature.

Results and Selection of Responses for Analysis

As common with many productive tasks, a number of the student participants failed to provide a response or only provided a text response. Consequently, the final total of completed responses was 25. Similar to the findings of Ward (1991), legs (72%) were the most common appendage of these generated creatures and eyes (88%) were the most common sensory organ (see Figures 3 and 4 for the complete list).



Figure 3: Percentage of common appendages for the imaginary creatures



Figure 4: Number of imaginary creatures that had no eyes or ears, one eye or ear, two eyes or ears, or more than two eyes or ears

In regards to the body and overall shape of these imagined creatures, just over half the participants generated one that is similar to a typical earth animal and only 20% provided an idiosyncratic or more unpredictable response (see Figure 5). These included conceptualizing this alien creature to have the shape of a balloon, autotroph, dust particle, chocolate bar, or parasol. These typically are non-animate objects that the individual gave animation to through using common features of animate objects such as sensory modes and appendages (i.e., chocolate bar with eyes and legs and arms or a balloon with eyes).



Figure 5: Percentage of imaginary creatures whose body resembles an animal, plant, insect, alien, or other shape

These results presented above are not surprising for they confirm what Finke et. al (1992) have pointed out, "the use of imagination to generate new exemplars of a category appears to be highly structured by the characteristic attributes of known category members" (p. 120). In order to look more closely at this structured imagination, selected responses from this pool were chosen for a more in depth analysis. When talking about creativity it is often viewed as the production of a perceivable product that is both novel and useful (Plucker, Beghetto, & Dow, 2004). Assessing creativity typically falls under two varying umbrellas, one viewed as being more objective since it utilizes standard criteria based on a set of defined norms (i.e., The Torrance Test of Creative Thinking; Torrance, 1972) and the other being more subjective, but ecologically valid, since it uses a technique whereby a group of independent judges assess the creativity of the product (i.e., The Consensual Assessment Technique; Amabile, 1982). I have selected five exemplar responses in this paper for analysis not because they have been assessed (objectively or subjectively) as being highly creative, but rather as a way to highlight the creative process of generating a novel response, specifically those that exemplified conceptual integration and/or conceptual expansion.

An Analysis of Five Selected Responses

In the following five responses, the first three responses focus primarily on conceptual integration and the final two responses focus on conceptual expansion. As for the formatting, each response includes both the drawing and the description. The descriptions were transcribed verbatim from the responses (completed as a paper-pencil task) and as these participants first language is Japanese, some of the English might not appear entirely grammatical. The drawings were scanned from the paper format into digital files.

A blend between two distantly related concepts: Terrestrial and aquatic animal. When asked to imagine an animate creature on a distant planet, one is primed to think about animals in general on this planet, but at the same there is a conflict for one knows that there is a high probability that this creature will be dissimilar to those found here on earth. Therefore, to resolve this conflict, participant 5 (as shown in Figure 6) blended two knowledge structures of animals found on earth to create this imaginary creature. This resulted in an animal that has semantic features of both a feline land animal and an aquatic animal. Contrary to the whiskers on cats, the ones on this alien creature are extremely long. This individual likely generated these whiskers intentionally during the drawing process, but the emergent properties of them were discovered later by exploring possible functions, and in this case, "for detecting the tides". So similar to terrestrial animals, they mediate the tactile sense. In addition, this creature also

has other aquatic properties like gills and scales on the lower part of its legs, but the overall structure of its body resembles a four-legged mammal of the feline family.

short hair. long whiskers

(Participant 05)

The image of my planet is that there is a lot of water; the area of water is 98% of the planet. This creature eats fishes or aquatic animals. When he eats fish, he dives deeply and finds the big (20 cm \sim 50 cm) fish, and eats. When he wants to eat the big aquatic animals, he uses his tail; he moves his tail like fish and picks the big creature, like an alligator. He usually sleeps in the cave, which he made from the rock wall. His hair is short because he can swim easily, but his whiskers are really long for detecting the tide. And he has scales on his limbs and tail, his pectoral muscle develop for swim. He can breathe in the water. He has gills.

He is the strongest monster in this planet, but his weak for infection. The fishes have a lot of parasites, his digestive organ can kill most the parasites, but some are strong enough to survive in his gastric juice, they multiply and do harm.

Figure 6: An imaginary alien creature (terrestrial/aquatic animal integration)

This response is a good example of how generating a blend is a common and effective way to imagine and create a new entity. The process of creating this blend involves aligning features between input space 1 (the terrestrial animal) and input space 2 (the aquatic animal) and then projecting features from both into this blended space (see Figure 7).



Figure 7: The conceptual blend for the alien creature (terrestrial/aquatic animal integration)

In this example, participant 5 used two concepts from distinctly different classes of animals, terrestrial and aquatic, in comparison to blending together two terrestrial animals (i.e., a dog and a horse). Therefore the semantic space between these relations is greater and more distant, resulting in higher tension between the two concepts and making the creature appear to be more creative. Yet this example uses two knowledge structures that share a similar taxonomic category, animals. In comparison, the following example goes one step further and makes a greater semantic leap by blending an animal with a plant in order to generate this alien creature.

A blend between two distantly related concepts: Animal and plant. When prompted to think of an alien creature, exemplars from the animal category on earth, as seen in the previous example, are the closest and most accessible semantic concepts since they themselves are creatures. Participant 19 likewise used an earth-like animal in the form of a reptile, but in this case, blended it with a plant, which provided this extraterrestrial animal to have unique features not common for earthly animals, such as the ability to generate energy from the sun through photosynthesis (see Figure 8).



(Participant 19)

I am an astronaut, and I had been a faraway planet from the Earth until last year because of a project. The project was to find new creatures in a faraway planet from the Earth. It took two years, and out team finally found out an animal there. It is the following (the drawing). The planet we went was like a desert. There are a lot of stones, rocks and sand, but there is one huge tree with a lot of green leaves. By the way, I talk about the animal we found there. It is like a lizard, but it has big ears like a leaf. They are green color, and there are blood vessels like the vein of a leaf. Surprisingly, our team discovered a fact that the animal generates energy by photosynthesizing with its ears.

Our team guesses its ears contain chloroplast in its ears. The animal seems to eat sand including abundant mineral. The color of whole body except ears is white. It has big ears, so it is very sensitive to sound We had difficulty catching it. And finally, we are now researching the relationship between the huge tree and the animal too.

Figure 8: An imaginary alien creature (*animal/plant integration*)

What makes this interesting is Participant 19 actually replaced the sensory mode, ears, with leaves. These ears can both generate energy through photosynthesis and can also take in a wide range of auditory sounds, typical of ears, but not typical of leaves on a plant, so they have dual function. Again the blending can be modeled with two input spaces, one for the reptile creature and the other for the plant. In the blended space, this newly generated creature emerges (see Figure 9).



Figure 9. The conceptual blend for the alien creature (animal/plant integration)

In the blend, the leaves inherit properties of the sensory organ, ears, that is to say they have auditory abilities, which is a property that they do not have in input space 2. Moreover, these ears in the blend also inherit properties from input space 2, as in they can photosynthesize in order to generate energy, which again does exist in input space 1. Consequently this is a clear example of emergent properties in the blend and how novelty arises from our capacity to integrate discrepant concepts together.

A blend between two distantly related concepts: Wind power and animate life. So far, these examples have involved two mental spaces involving animate forms of life, but in this last example of a conceptual blend, participant 34 imagined this creature to resemble a parasol that generates energy like a wind turbine. That is to say, this turbine is a living creature. Moreover, it extends a long string, which resembles a root, to a distant part of the planet where it produces the next generation of these alien species. This may at first seem more closely resembling a plant, but the individual describes how the energy harvested from these storms on the planet, as well as organic substances in the soil, provide the source of energy to build body tissue. Here this individual produced a creature that does not resemble any earth-like animal, but still used the knowledge structures of animals, plants, and wind power and blended them together to generate this response.



(Participant 34)

The size is much larger than the earth, and because of that, there is so big atmospheric pressure differences between one side and the other side of the planet (this is because the solar energy is different depending on the different sides of the planet). And therefore, so heavy storms are always happening on the surface of the planet. In such a planet, creatures like (above) can live and survive.

Basically, in order to survive, creatures only have to generate energy to lead their lives and to make their tissues of bodies. The creature has a small parasol, in other words a turbine (1), and stick to the surface of the ground in order not to be flied away by heavy storms. They generate energy by rotating the parasol. This system is just the same with "wind power plant". And then, using the energy and the organic substances in the soil, they create their body tissues. Also they create a long string-shaped tissue (2), in the ground and stick it out in other distant place. This will become next generation of creature. Finally, when one of them used up the organic substances it could get from the soil, it dies and remains as "organic substances" itself, when there is already next generation of it in other distant place. Long after that, one of the creatures can use the "organic substances" derived from a dead body of another, it can also survive by using that. Like this circulation, these creatures can survive in the planet forever.

Figure 10: An imaginary alien creature (*plant/wind power turbine integration*)

In the first two examples, the conceptual integration involved two clear input spaces, but this example there are multiple mental spaces interacting to provide structure to this imagined creature. In this example, I highlight the importance of knowledge structures in order to generate this novel idea. First, one begins with some general knowledge of living creatures; they have bodies, they need energy to sustain these bodies (metabolism), and they reproduce. In addition, creatures evolve by adapting to their environments. Specifically, creatures on this imaginary planet due to the strong winds are bound to the surface much like a plant and consequently take various features of a plant, such as getting nutrients from the ground. In contrast to earth-like plants, this creature is in the shape of a turbine. Therefore secondly, one utilizes a mental space involving wind-power generation and projects this into the blend. So this creature, instead of relying on photosynthesis or a food-based metabolism for energy, relies on the strong windstorms on this planet. Finally as for reproduction, this individual describes this "long string-shaped tissue", which reaches under the surface to a distant part of the planet and produces the next generation of this creature. This idea seems to emerge from a blend itself between the placental mammalian umbilical cord and the roots of a plant, which again indicates the integration of these two mental spaces, along with the mental space of wind power turbines.

Consistent with previous research that found that the dissimilarity between the two concepts yielded more emergent properties (Wilkenfeld & Ward, 2001), this discrepant combination of an animate creature with a technological innovation like a wind turbine seems more creative and complex than the more stereotypical combination (land-aquatic creature, as in example 1). This example shows how the creative process alters existing concepts through widening and integrating conceptual knowledge structures in order to generate a novel idea for an alien creature.

In sum, the previous three examples showed how conceptual combination between two or more distinct semantic concepts is a common way to generate a creative product. Another process is conceptual expansion, which refers to the ability to widen the conceptual structures of known concepts and is also critical for the creation of a novel product or idea (Ward, 1994; Ward, Smith, & Vaid, 1997). A common example in the literature (Kröger et al., 2012) on conceptual expansion is the use of an alternative uses task, which asks the participants to come up with as many alternative uses of a common object like a shoe as possible, resulting in responses like it can be used as a flowerpot. This study required the participants to create an alien creature, which constrained the participants to think of an animate living thing including prototypical features of a living being such as having sensory organs. Similar to the alternative uses task, in this task the participant needed to suppress the functional fixedness of these sensory modes and extend their semantic functions in unconventional ways, as can be seen in the following two responses.

Conceptual expansion of the sensory mode: The size of the ears. Conceptual expansion extends the boundaries of a concept by mentally crafting novel instances of it, in the example presented here, this entails extending the properties of the creature's oversized ears in unusual and novel ways. For instance, they can be used to fly, sleep in, and to hold and use tools like hands (see Figure 11). That is to say, when the ears become wings, they now assume a new set of properties, as opposed to the conventional sense of ears as the auditory sensory mode, so in short, they allow the creature to fly. This may seem rather ordinary since wings are a common feature of many animals, but this participant extended the properties of these oversized ears to include other more unusual functions such as a blanket for sleeping in and as a limb to grasp things like a pestle in order to make its favorite food, rice cakes.



Figure 11: An imaginary alien creature (oversized ears)

The organizing frame for this blend is the mouse-like animal, which provides the creature some shape and structure (sensory organs like eyes, nose; appendages like head, arm, and legs). The other three input spaces provide extended functions for these unusually large ears from other animate creatures and an inanimate object, which then gets projected into the blended space resulting in this imagined creature (see Figure 12).



Figure 12: The conceptual blend for the alien creature (oversized ears)

The example outlined here utilized a strategy, which I refer to as "amplified deviation", in order to generate a novel response to this prompt. Deviance has been studied for a long time in the social sciences and commonly refers to a disjunction from order or violation of normative expectations (Cohen, 1965). This behavior closely overlaps with views of creativity, which has been described as the departing from the status quo (Mumford & Gustafson, 1988). Consequently, deviance or the act of deviating from conventional norms in order to construct a new idea is part of the creative process, especially in regards to conceptual expansion. Another example of amplified deviance is another example with ears, but does this in a very different way.

Conceptual expansion of the sensory mode: The excessive number of ears. One way to creatively generate an alien creature is to choose some structure or property of a known concept (body, sensory organs, etc.) and then to elaborate, explore, and experiment with possible ways to break from common somatic norms, as shown in the previous example with the oversized ears. A common feature of animate creatures on earth is the binary norm of the auditory and optical sensory organs (as indicated in Figure 4, 75% of respondents' creatures has two eyes and while most did not include ears for their creatures since these modes are not as salient, those who did, 88% had two ears). In another example of amplified deviation in regards to the auditory sensory mode, participant 27 generated a creature that has 11 ears (see Figure 13).

He has I ears. This is a ear. He can hear anything. Their height is 172 meter. All of things this is their food. Shape is like a box. It is not delicious for earth creature but they have it. It is delicious for them Faller, blager. they have only This is foot with flipper. (Participant 27) They have human-like organs, but they don't have nose. Their planet is very safe and their diet is

all box food, so they don't have to feel smell. At first, their ancients had a nose, but it has disappeared. They live in water. The water's color is white. They don't know where their family is because white color keeps them from finding the others. They recognize others by sensitive ears.

Figure 13: An imaginary alien creature (*11 ears*)

Exploring and pursuing the purpose of these ears, the participant described how they are used to "recognize others". This attribute overlaps with other sensory modes that most animals on earth usually use to recognize others (i.e., the visual or olfactory modes). Another deviation involves the lack of a nose, which through evolutionary change disappeared since their food is in the form of a box and does not have any smell. Again, this participant uses knowledge about how evolution works to creatively play with the sensory modes of this alien creature. Another element of amplified deviation in this example involves the size of these creatures, as in being a hundred times taller than a typical human. Moreover, the water is white on this distant planet, compared to the translucent waters on earth, which thereby requires these creatures to use their ears to recognize others due to the lack of visibility. Despite this deviation from the stereotypical, the other features of this alien appear rather ordinary, as in the eyes, shape of the head, and body (save for the feet that integrate features of an aquatic animal, see Figure 6 for a similar example). So there appears a need to still be able to recognize the familiar within the imaginative.

As shown in the previous two examples, conceptual expansion is important for generating new ideas. It involves extending the conventional norms of concepts by including new features and attributes (i.e., large ears used as blankets). In fact, Ward et al. (1999) suggest that based on anecdotal and historical accounts in real-world settings novel and creative ideas often develop from minor extensions of familiar concepts. The familiarity of concepts reflects the psychological entrenchment of them through conventionalization and conceptual expansion is one process of deviating from these norms and extending them in unfamiliar and imaginative ways.

Discussion

This article aimed to investigate the creative process of generating an imaginary creature and then to analyze and model this process focusing on conceptual blending and conceptual expansion. Previous research suggests associative processes (Benedek, Könen, & Neubauer, 2012; Koestler, 1964;), as well as both semantic (Abraham & Bubic, 2015) and episodic (Addis, Pan, Musicaro, & Schacter, 2016) memories play an important role for creative idea generation. The importance of associative processes for creative ideation has been around since early research into creativity (Koestler, 1964; Mednick, 1962), as Mednick suggested, "any ability or tendency which serves to bring otherwise mutually remote ideas into contiguity will facilitate a creative solution" (p. 222). The more discrepant the combinations, the more creative possibilities emerge compared to stereotypical combinations (Ward, 2007). In addition, episodic and semantic memories constitute one's knowledge structures of the world gained through embodied experiences interacting with the environment and others. Using these knowledge resources, the constructive process of conceptual integration involves selecting and then projecting partial structural features from two or more mental spaces into a blended space, yielding emergent structural features that are not the mere sum of its constituent parts (Fauconnier and Turner, 2002). As for conceptual expansion, this involves inhibiting stereotypical instances of the concept and looking for ways to elaborate, augment and broaden the structure and properties of the concept. This is similar to the "alternative uses" task for measuring divergent thinking, which requires one to deviate from conventional instantiations of a common object like a brick. In the case of this study, this deviation involved a sensory mode or some other bodily attribute of an animate creature.

Although this study used imagery for the process of conceptual combination, conceptual combinations are quite common in everyday language, especially as a way to create new categories. For instance, *wind farm*, this combination involves wind turbines and a physical location where crops are harvested. In the blend, the wind turbines are positioned in rows on this specifically designated land and the wind is harvested, as a product, not for human consumption, as in food, but for energy consumption (other examples include; *carbon footprint, helicopter parents, eye candy*, etc.). The key point here is that this is a normal process for expanding our knowledge of the world and crucial for the development of novel ideas.

As illustrated in this study, combining concepts, especially those distantly related, are important for generating novel ideas, and developing these skills is important and has real world application. For instance, Ward (2004) discusses the practical side of conceptual combination for entrepreneurs who are perpetually looking for new ideas or marketers who look to effectively sell a product. Again consider Figure 1, and how the creative designers used conceptual combination to blend the knowledge structures of humans and moths in order to capture the viewers' attention and effectively communicate the intended message in a novel and imaginative way. Moreover, conceptual combination is a common technique used in

producing pictorial or visual metaphors. These visual metaphors are widespread in the world of advertising (Kaplan, 2005) and economics (see Birdsell, 2019). There are many examples and different techniques used to produce such visual metaphors. One is called a *hybrid model*, whereby two concepts are visually blended together in the image (Forceville, 1996). This is very similar to the drawings by participants in this study, specifically the land/aquatic animal (Figure 6) and land/plant animal (Figure 8). In a similar way, a Toyo Tires advert highlights the gripping force of their tires by blending them together in the image with octopus legs (car tires/octopus legs).¹ So conceptual combination, as well as conceptual expansion, are important cognitive tools that humans use to create and produce novel ideas in real world situations from entrepreneurs and inventors to advertisers and marketers. In short, conceptual combination is important in the creative process for it involves "the creation of new knowledge structures through the integration of previously distinct concepts" (Scott, Lonergan, & Mumford, 2005 p. 80).

In summary, this study took a further step forward in showing the two common techniques of creative cognition, conceptual combination and conceptual expansion. These cognitive skills are part of the everyday (Richards, 2007) and distributional (Sternberg, Grigorenko, & Singer, 2004) aspect of human creativity. Interest in using the creative cognition approach has recently been applied to such diverse fields as neuroscience (Abraham, Rutter, Bantin, & Hermann, 2018) and education (Pang, 2015). Pang, for instance, discusses how identifying generative processes (like conceptual combination) as a possible classroom activity for teachers to promote the potential for student creativity. Generative processes like these promote learners to experiment and explore conceptual boundaries and novel combinations. Developing these skills offer new possibilities that might enhance the overall creativity of the learners. Creativity skills are economically paramount not only within the changes in modern economy (Florida, 2002), but also socially and environmentally more important than ever before for generating novel ideas to solve the many global issues facing modern society.

¹ See here for the print ad: https://www.adsoftheworld.com/media/print/toyo_octopus

References

- Abraham, A., & Bubic, A. (2015). Semantic memory as the root of imagination. *Frontiers in Psychology*, *6*, 325. https://doi.org/10.3389/fpsyg.2015.00325
- Abraham, A., Rutter, B., Bantin, T., & Hermann, C. (2018). Creative conceptual expansion: A combined fMRI replication and extension study to examine individual differences in creativity. *Neuropsychologia*, 118, 29–39. https://doi.org/10.1016/j.neuropsychologia.2018.05.004
- Addis, D. R., Pan, L., Musicaro, R., & Schacter, D. L. (2016). Divergent thinking and constructing episodic simulations. *Memory*, 24, 89–97. https://doi.org/10.1080/09658211.2014.985591
- Amabile, T. M. (1982). Social psychology of creativity: A consensual assessment technique. *Journal of personality and social psychology*, 43(5), 997–1013. https://doi.org/10.1037/0022-3514.43.5.997
- Benedek, M., Könen, T., & Neubauer, A. C. (2012). Associative abilities underlying creativity. *Psychology of Aesthetics, Creativity, and the Arts, 6*, 273–281.
- Birdsell, B. (2014). Fauconnier's theory of mental spaces and conceptual blending, in J. Taylor & J. Littlemore (eds.), *Bloomsbury companion to Cognitive Linguistics*, (pp. 72–90). London: Bloomsbury Academic.
- Birdsell, B. (2019). Exploring Cognition in CLIL: Creativity, Metaphors and Economics. *The Journal of the Japan CLIL Pedagogy Association*, *1*, 118–135.
- Boden, M. A. (2004). *The creative mind: Myths and mechanisms* (revised and expanded 2nd ed.). London: Routledge.
- Cohen, A. K. (1965). The sociology of the deviant act: Anomie theory and beyond. *American sociological review*, *30*(1), 5–14. https://doi.org/10.2307/2091770
- Fauconnier, G. & Turner, M. (2002). *The way we think: Conceptual blending and the mind's hidden complexities*. New York: Basic Books.
- Fauconnier, G., & Turner, M. (2003). Conceptual blending, form and meaning. *Recherches en communication*, 19(19), 57–86.
- Finke, R. A., Ward, T. B., & Smith, S. M. (1992). *Creative cognition: Theory, research and applications*. Cambridge, MA: MIT Press.
- Florida, R. (2002). The rise of the creative class and how it's transforming work, life, community and everyday life. New York: Basic Books.
- Forceville, C. (1996). Pictorial metaphor in advertising. London: Routledge.
- Forceville, C. & Urios-Aparisi, E. (eds.) (2009). *Applications of Cognitive Linguistics*. *Multimodal Metaphor*. Berlin: Mouton de Gruyter.
- Giora, R. (2003). *On our mind: Salience, context, and figurative language*. New York, NY: Oxford University Press.
- Koestler, A. (1964). The act of creation. New York: Macmillan.
- Kaplan, S. (2005). Visual metaphors in print advertising for fashion products, in K. Smith, S. Moriarty, G. Barbatsis, & K. Kenney (eds.), *Handbook of visual communication: Theory, methods, and media*, (pp. 167–177). New York: Routledge.

- Kröger, S., Rutter, B., Stark, R., Windmann, S., Hermann, C., & Abraham, A. (2012). Using a shoe as a plant pot: neural correlates of passive conceptual expansion. *Brain Research*, 1430, 52–61. https://doi.org/10.1016/j.brainres.2011.10.031
- Mednick, S. A. (1962). The associative basis of the creative process. *Psychological Review*, 69, 220–232. https://doi.org/10.1037/h0048850
- Mumford, M. D., & Gustafson, S. B. (1988). Creativity syndrome: Integration, application, and innovation. *Psychological Bulletin*, *103*(1), 27–43.
- Pang, W. (2015). Promoting creativity in the classroom: A generative view. *Psychology of Aesthetics, Creativity, and the Arts, 9*(2), 122–127.
- Plucker, J., Beghetto, R. A., & Dow, G. (2004). Why isn't creativity more important to educational psychologists? Potential, pitfalls, and future directions in creativity research. *Educational Psychologist*, 39(2), 83–96. https://doi.org/10.1207/s15326985ep3902_1
- Richards, R. (2007). Everyday creativity: Our hidden potential. In R. Richards (Ed.), *Everyday creativity and new views of human nature* (pp. 25–54). Washington, DC: American Psychological Association.
- Scott, G. M., Lonergan, D. C., & Mumford, M. D. (2005). Conceptual combination: Alternative knowledge structures, alternative heuristics. *Creativity Research Journal*, *17*(1), 79–98. https://doi.org/10.1207/s15326934crj1701_7
- Smith, S. M., Ward, T. B., & Finke, R. A. (1995). *The creative cognition approach*. Cambridge, MA: MIT Press.
- Sternberg, R. J., Grigorenko, E. L., & Singer, J. L. (2004). *Creativity: From Potential to Realization*. Washington, DC: American Psychological Association.
- Torrance, E. P. (1972). Predictive validity of the Torrance tests of creative thinking. *The Journal of Creative Behavior*, *6*(4), 236–262. https://doi.org/10.1002/j.2162-6057.1972.tb00936.x
- Ward, T. B. (1991). *Structured imagination: The role of conceptual structure in exemplar generation.* Paper presented at the meeting of the Psychonomic Society, San Francisco.
- Ward, T. B. (1994). Structured imagination: The role of category structure in exemplar generation. *Cognitive Psychology*, 27, 1–40. https://doi.org/10.1006/cogp.1994.1010
- Ward, T. B. (1995). What's old about new ideas? In S. M. Smith, T. M. Ward, & R. A. Finke (Eds.), *The creative cognition approach*. Cambridge, MA: MIT Press.
- Ward, T. B. (2004). Cognition, creativity, and entrepreneurship. *Journal of Business Venturing*, 19(2), 173–188. https://doi.org/10.1016/S0883-9026(03)00005-3
- Ward, T. B. (2007). Creative cognition as a window on creativity. *Methods*, 42(1), 28–37. https://doi.org/10.1016/j.ymeth.2006.12.002
- Ward, T. B., & Sifonis, C. M. (1997). Task demands and generative Thinking: What changes and what remains the same? *The Journal of Creative Behaviour, 31*, 245–259. https://doi.org/10.1002/j.2162-6057.1997.tb00797.x
- Ward, T. B., Smith, S. M., & Finke, R. A. (1999). *Creative cognition*. In R. J. Sternberg (Ed.), Handbook of creativity, (pp. 189–212). Cambridge University Press.

- Ward, T. B., Smith, S. M., & Vaid, J. (1997). Conceptual structures and processes in creative thought. In T. Ward, S. Smith, & J. Vaid (Eds.), *Creative thought: An investigation of conceptual structures and processes* (pp. 1–27). Washington, DC: American Psychological Association.
- Wilkenfeld, M. J., & Ward, T. B. (2001). Similarity and emergence in conceptual combination. *Journal of Memory and Language*, 45(1), 21–38. https://doi.org/10.1006/jmla.2000.2772
- Wisniewski, E. J. (1997). Conceptual combination: Possibilities and esthetics. In T. B. Ward, S. M. Smith, & J. Vaid (Eds.), *Creative thought: An investigation of conceptual structures and processes* (pp. 51-81). Washington, DC: American Psychological Association.

Corresponding author: Brian J. Birdsell **Contact email:** brian@hirosaki-u.ac.jp

Telling Stories to Narrate Futures: Engaging Storytelling as Research Practice with High School Females

Amanda Hill, St. Mary's University, USA

Abstract

This paper discusses "Exploring Our Information Diets," a yearlong project that gave female high school students an opportunity to use creative engagement as a research platform to explore their information diets and media consumption. The project was created in partnership with an urban high school and a theatre for families and young audiences in Orlando, Florida. The author explores the methodology behind the project, examines the process undertaken, investigates the opportunities the project offered students, and studies how this creative engagement shaped the presentation and dissemination of the students' research. During the course of the project, students constructed live and digital performance pieces that organized their findings related to patterns and expectations of gender construction. The author worked with students to identify the images and messages they encountered in the media they frequently used. The author employed methodologies of participatory action research, live performance, and digital storytelling in order to ensure the students were engaged research collaborators, ensuring their participation in collecting data and formulating conclusions. Using this methodology, the author asked students to interrogate their media intake and use their observations to reach a larger audience in two storytelling mediums: live performance and digital video.

Keywords: digital storytelling, information diets, participatory action research; identity, gender

Exploring Our Information Diets: An Overview

This paper explores the methodology and process of a residency I facilitated entitled *Exploring Our Information Diets* aimed to honor female students' voices and experiences in a process of reflection and artistic creation around topics of gender performance. In so doing, the residency helped students envision their roles as community leaders capable of making change. The students conducted research using their information diets to write and devise a live performance and a digital story that explained their research and call for action. In the process of generating knowledge, the students learned creative methods by which they could relay messages to community members and help shape the changes they wished to see in their society, granting them authority in a society that often rejects their experiences as invaluable.

The residency took place at a large and diverse Orlando high school in a class geared toward fostering leadership among high school females during the 2014-2015 academic year. In total, there were 16 participants, aged 14-19, of varying ethnicities and backgrounds. Twenty class sessions took place over the course of one academic year, and each session allowed the students and me to work together for approximately 50 minutes. The project consisted of two segments: a live performance and a digital story. In the fall semester, students devised a short performance piece to share at Valencia College's Women Empowerment Summit. Devising is a process of collaborative creation where the script comes from shared embodied experiences such as improvisation and tableaux. Like digital storytelling, the devising methodology draws its power by making an art form accessible to people who do not generally consider themselves performers. In the spring semester, students created a digital story using footage from the performance and new audio/visual and written content generated that semester. Both works focused on ideas of gender performance, what it means to be a woman, and empowering women for their character rather than their appearance.

Combining creative research practices with performative research dissemination gave students a new approach to examining their approaches to scholarship and research, providing them the opportunity to connect to their collected data in new ways. Working collaboratively, the students contended with creative approaches to reaching their audience, curating collaborative research findings, and conveying those findings through diverse mediums including writing, performance, and digital media. The creative approach to research allowed students to engage audiences emotionally and rationally. At the end of each performative work, the students provided their audiences with a call to action, sharing with them the vision of the future they hope to create. Their creative research practices provided an opportunity to share their research findings through storytelling, engaging themselves and their audiences in unique and innovative ways. Further, the project helped shed light on the way students encounter images and messages of gender and how they use those images to create their own sense of selves.

Vygotsky and the Creative Imagination: An Entry Point for Creative Collaboration in an Educational Environment

Although lesser known than his works on teacher training, Russian developmental psychologist Lev Semenovich Vygotsky spent a significant amount of time considering the role of creativity in the processes of learning (see: *Imagination and Creativity in Childhood, Imagination and Creativity in the Adolescent*, and *Imagination and Its Development in Childhood*). Francine Smolucha (1992) found in review of all of these works that Vygotsky's theory of creative imagination has four main features:
- 1. Imagination develops out of children's play.
- 2. Imagination becomes a higher mental function and as such is a consciously directed thought process.
- 3. In adolescence, creative imagination is characterized by the collaboration of imagination and thinking in concepts.
- 4. The collaboration between imagination and thinking in concepts matures in the artistic and scientific creativity of adulthood. (p. 49–50)

For Vygotsky then, a combination of thought and imagination form the basis of creative practices, practices that are developed naturally out of play practices. Vygotsky argued, "The child's play activity is not simply a recollection of past experience but a creative reworking that combines impressions and constructs from them new realities addressing the needs of the child" (Smolucha, 1992, p. 51). Thus, the creative imagination assumes direction, making it goal-oriented in its nature.

Of specific interest in Vygotsky's reflections on creativity is his theory of combinatory imagination, which employed the collaboration of imagination and thinking in concepts and took place in "all cultural life, including artistic, scientific, and technical creativity" (Smolucha, 1992, p. 52). For Vygotsky, combinatory imagination was a nuanced form of imagination, which he distinguishes from what he calls reproductive imagination. He wrote, "If human activity were limited to the reproductions of the old, a person would, in essence, be attending only to the past and would be able to adapt the future only to the extent that it reproduces the past. The creativity activity of an individual does this essentially; it attends to the future, creating it, and changing the view of the present" (Smolucha, 1992, p. 52).

The ability to attend to the future through creative practices is key to the methodology behind "Exploring Our Information Diets," because it enabled the students to take part in active learning practices. A practice of combinatory imagination, involving the collaboration of thought and creativity, invited the students to create works of art that established the current landscape of the society based on the students' research to help shape the future they wanted to see at their school and in the world. Simon Nicholson (1971), an English architect and artist, understood creativity as a natural part of every individual, rather than a trait embodied by a select few. He suggested a theory of "loose parts" where, "in any environment, both the degree of inventiveness, creativity and the possibility of discovery, are directly proportional to the number and kind of variables in it" (p. 6). For Nicholson, schools typically "do not meet the 'loose parts' requirement" as it is "clean, static and impossible to play around with" (p. 5). "Exploring Our Information Diets" aimed to create in the school environment a "loose parts" landscape where students were capable of compiling, what Nicolson would call variables, into new compositions. For the students involved with this residency, the variables included interactions with other people, sound, music, motion, images, words, concepts, and ideas. These materials constitute the "loose parts" from which students were tasked with creating meaning.

Paulo Freire (1992) once wrote, "A careful analysis of the teacher-student relationship...reveals its fundamentally *narrative* character" (p. 71). Here narrative references the author-reader dichotomy and suggests a hierarchical understanding of classroom dynamics that puts the student in the passive role of *listener* and the teacher in the role of *orator*, the one who imparts knowledge. Freire argued this classroom scheme leaves little room for students to share their experiences and knowledge in a way that honors its value and insight. Omitting students from participating in the knowledge in the room, becomes dominant and powerful. Classrooms such as these alienate students and distance them from their educator. Freire warned this kind of classroom turns students into "receptacles' to be 'filled," an idea he later defined as the *banking concept of education* (p. 72). He cautioned, "The more students

work at storing the deposits entrusted to them, the less they develop the critical consciousness which would result from their intervention in the world as transformers of that world" (p. 73). Digital storytelling gives students the chance to author their own stories, stories only they can tell. As authors of their own stories, students become the experts and convey knowledge within the classroom as such, upsetting the traditional role of educator as knowledge giver.

Combining Creative Media: A Performative Methodology

With a mind to envision a learning environment where students are part of the research and sensemaking processes, I turned to Participatory Action Research (PAR). Scholars such as Freire (1988) and McTarget (1997) have shown how PAR can engage participants in a process of sense-making and knowledge generation, which is then shared through an active means. The roots of PAR stem from an interest in self-reflexivity and action and values participants as active members in knowledge building. It values the experience of participants of all ages and backgrounds. bell hooks (1994) suggested the importance of respecting student input cannot be undervalued, "There must be an ongoing recognition that everyone influences the classroom dynamic, that everyone contributes" (p. 8).

A large part of participatory methodologies relies on the experiences and experiential knowledge of those conducting the research, and in so doing, gives authority to these experiences and their tellers. "Exploring Our Information Diets" was no different. The author created a series of lessons utilizing a participatory methodology to work with a group of 16 high-school females to become aware of and evaluate examples of gender performance found in their everyday *information diets*. An *information diet* is "how we consume information *individually*" and references a variety of media that deliver information to us on a daily basis, much of which, today, is digital (Stefik, 2011, p. 39). Mark Stefik (2011) suggested digital sense-making is still primarily an individual act, though he noted that social media yields the power to make this act networked. Since the consumption of information is typically identified as a passive act, I wanted to create a sense of "networked" knowledge to discover what these young women saw in their information diets and to what extent were they aware of gender performances, expectations, and stereotypes they consumed.

The residency relied first on Popular Theatre to engage participants in meaningful discussions and exercises of such digital gender identity markers. Popular Theatre is "a process of theatre which deeply involves specific communities in identifying issues of concern, analyzing current conditions and causes of a situation, identifying points of change, and analyzing how change could happen and/or contributing to the actions implied" (Prentki & Selman, 2000, p. 8). The goal of this first stage of the project was to create collectively a short performance piece and engaged students in discussions of issues relevant to their lives. Through discussion, critique, reflection, and analysis, the studentresearchers had the opportunity to evaluate their culture and society in an effort to propose solutions to affect change for problems they found oppressive or demeaning. Their collective research culminated in an act of social action, which they defined and made as a way to highlight the change they wish to see and invite dialogue. In the creation process, the authors underwent a period of reflexivity, pausing to reflect on their current understandings of the society around them, in a way that makes it possible for them to see and evaluate possible changes they see or would like to see in themselves, their community, and society. In their residency, the students created a short live performance piece that was later incorporated into a larger digital story, which, by its virtual nature, had the ability to be shared with a broader audience, potentially affecting a greater social change.

In his book *The New Digital Storytelling*, Bryan Alexander (2011) addresses the differences perceived between combining the *digital* with *storytelling*. He noted the first is still a relatively new field and medium, while the latter is an age-old practice, "connected to a bardic or Homeric tradition." He noted

that when he asked participants in his digital storytelling residencies "what stories are *not*" they often gave answers "associated with the digital world: data, especially data without meaningful patterns" (p. 4). Raw data needs an author to connect the information into a story, creating meaning in the relationships by which they combine the data. Digital storytelling thus becomes a combination of the new and the old, bridging time and space to create a new method of storytelling and a new vehicle by which to share knowledge. In addition, I chose to create and use a digital storytelling-based lesson plan because I saw an opportunity to demystify media production for several young women who might be able to pursue media production in the future in their personal and professional lives. In my role as project facilitator, I wanted to create a space where students could guide the project's research and product creation, while I maintained a distance from the actual project.

The combination of these two mediums creates a heightened access to created stories. Digital media allows for the easy creation and dissemination of works. Digital storytelling becomes an important medium for advocacy because of its practicality and efficiency. Digital storytelling as a broad term can encompass a range of stories told using digital media and media-based storytelling methods. Inside this large umbrella is a form of storytelling stemming from the work of StoryCenter (previously the Center for Digital Storytelling) also identified as "digital storytelling." The StoryCenter style of digital storytelling makes use of off-the-shelf software to allow the authors to create short, personal narratives, usually ranging between three to five minutes in length by "creatively using and recombining easy-to-access elements of 'traditional' or common media such as photographs, films, music, or text" from found digital objects and personal archives (Helff & Woletz, 2009, p. 135). This paper will use the term "digital storytelling" to identify this latter meaning.

Joe Lambert (2009), one of the founders of what was then the Center for Digital Storytelling in the 1990s suggests

By bringing people together to share stories and make artifact out of transformative narratives, we are able to stop and take stock, and find ways to insert these snapshots of existence into our daily dialogues. This is why digital storytelling workshops never get old. Like all healthy practices, storytelling renews and changes everyone involved in the process. (p. xv)

The narrative style of telling personal stories emerged "from a diverse lineage of cultural production" that includes "home video" and "photo essays" among other things (Fletcher & Cambre, 2009, p. 114). Digital storytelling serves to allow citizen to voice their own personal stories using off-the-shelf technologies like iMovie or Window's Movie Maker. These technologies are used for two main reasons: first, because they are generally easy to get material access to, and second, because they have low requirements for gaining functional access, meaning they are relatively easy for participants of varied technological backgrounds to use. For the project with the high school youth, I used an online cloud-based editor called WeVideo, which allows access to editing from anywhere with internet access.¹

¹ Due to technological and time constraints, I edited the digital story outside of the classroom, and I was concerned this would remove the response-ability of the students. To ensure their voices still influenced the final video, I sought their advice on the progression of words and images before beginning to edit and throughout the editing process. We held several pre-screenings, which allowed the students to see the progress on the digital story and offer feedback. I enabled them to take the lead in the critique process, thereby allowing them to discuss amongst themselves the order and montage of the digital story. I used their decisions to edit the digital story in a way that represented and respected their collective vision and did not make any changes without the approval of the students.

Like PAR, digital storytelling values citizen knowledge and authorship, making this a powerful tool when working in a traditional classroom setting like those described by Freire. In the classroom, digital storytelling gives students the chance to author their own story, a story only they can tell. As authors of their own stories, students become the conveyors of knowledge within the classroom, upsetting the traditional role of educator as knowledge giver. By entering into the creative process as a facilitator, I created a space where students could allow their voices to guide the direction of the project's research and creation, while maintaining a distance from the actual project that would allow me to help the students brainstorm and work their creation challenges. Their classroom teacher additionally took on the role of observer and guide, again providing them with the authority to create meaning.

From Loose Parts to Storytelling

As a means of giving the students guiding material and inspiration for their research, I began the residency with a campaign from UN Women titled *The Auto-Complete Truth*. The video and advertisements from the campaign highlighted results from Google's auto-complete search feature. The campaign took real searches to show that the auto-complete feature suggested searching for offensive and oppressive. For example, a search beginning "women should" would return results such as "women should not speak in church," "women should be in the kitchen," and "women should be slaves" (UN Women, 2013). It should be noted that in a survey completed by the students, all 16 of them noted Google as being their primary search engine. One student additionally mentioned using Yahoo to search and another additionally mentioned using "Research Database 'PROQUEST'." At the end of the residency, I asked students to remind me of something they saw in *The Auto-Complete Truth* on the first day. Ten of the 16 students highlighted a negative comment or moment of the film. Only two students highlighted positive comments or moments. Five students specifically mentioned the line "women should be slaves."

To create the live performance piece, students brainstormed how they see women being portrayed, what women are capable of doing, and what they envisioned for the future of womanhood. They used their information diets to compile examples of gender performance from sites like Facebook, Twitter, and Instagram. Their brainstorms transformed into tableaux (still images they created using their bodies) and over time coalesced into a short piece that used embodied images, movement, and speech to share their findings and push for change. From their research, they concluded that society often asks women to wear masks, which in their words meant society asked women to "be perfect," "to hide their feelings," "to be sociable, funny, and smart," and "not to be anything less than a work of art." They further defined this problem noting, "When we wear masks we focus on what others think about us instead of what we think about ourselves" (Orlando Repertory Theatre, 2014). The lines from their performance, titled "I am A Woman," resonated with the college audience at the Valencia College's Women Empowerment Summit, who asked for an encore performance so they could record and share their words.

Unlike the performance, the students' first task in creating the digital story was to create the story's script. Brainstorming on the same subjects used to create the performance piece, the students found creative ways to expand those arguments into new ideas and avenues of research. They brought in new material to share, which they collected from a follow-up assessment of their information diets. Students brought in memes, social media postings by celebrities, news articles, and inspirational messages. They shared their found pieces with the class and together brainstormed new directions for their digital story script. As the students discussed, one student typed the comments into a digital document. At the

Acting as a puppet in this way, I hoped to retain a sense of their authorship throughout the entirety of the creation process.

next class session, I brought three copies of their comments into the classroom. After cutting up the comments line by line, the students, divided into three groups, created poems that used at least 75% of randomly divided comments. In this first round, students were not allowed to change the comments in any way. Students could add up to two lines to help the flow of their piece. After five minutes, the groups rotated. They evaluated their peer's poems and made changes as they saw fit. While the groups needed to respect the intentions of the original group's poem, they were allowed to alter the text of the comments by removing, adding, or changing words. They were additionally allowed to add two more lines if they choose. We rotated twice more until the groups ended back at their original poem. The students evaluated the changes made to their pieces and had time to edit their poem free from constraints before we shared the poems as a group. After group feedback, students had another chance to edit their poems. The three poems, "Gender Isn't Real," "Only She Can" and "Beauty is Subjective" became chapters in the digital story.

I brought typed copies of their poems with me to our next session as well as my computer so I could audio record the students' performing their poems. Before recording began, students were instructed to divide the poem into presentable lines, identify moments of single and multi-voicedness, pitch and tone. We discussed the ways words take on meaning when spoken and the ways in which the same words can mean different things depending on how they are voiced. We practiced saying words and phrases using different intonations, pitch, timbre, and tone. Students then rehearsed the voicing of their poems before beginning the recording process.

In addition to scripting and recording the oral text of the digital story, each student completed a set of six self-portraits that reflected their research and thoughts about the ways they personally perform gender. To frame the collection of portraits they took, I asked students to think about their six pictures collection as an expanding narrative. That is, the first image would focus on a small area, the next might be have a slightly wider focus, and so on until they reached the final portrait, which could be either a head shot or full body portrait. In each picture, the student had to capture the ways she did or did not perform gender. To capture the images, students were paired in groups of two. Close-up images collected included pictures of jewelry such as necklaces or bracelets, painted nails, clothing and shoes. Some students chose to take the same picture six times, moving from a narrow area of focus to a broad area, thereby building the image slowly. Other students captured close-ups of several different body parts before taking their final full frame self-portrait. One student photographed herself slowly removing her hands from her face so that each frame revealed a little more. In editing the video, these pictures were juxtaposed with the students' collaborative poems and added another dimension of research to the digital story.

The students titled the edited digital story "You Are Who You Are." The digital story begins with the brief introduction where students address issues of fear and discomfort that might accompany students who feel as though they "don't fit in" at their high school. It opens with an image of the hallway directly outside the classroom where we worked with a voice over that says, "Walking down the hallways...do you ever feel scared, lonely, out of place, insecure, not welcome, judged, different, unique?" Then, an image of the high school's bathroom appears, and students ask, "Looking in the bathroom mirror do you ever try to fix your hair, your make-up, the way you dress, your attitude, your running tears, your appearance?" A final image of the school shows the outside courtyard, and here students ask, "Passing through the courtyard do you ever try to hide you're your feelings, your loneliness, your fears, the real you, from others?" The video then cuts to an image of the title card before displaying the three poems (Orlando Repertory Theatre, 2015).

The students do not ever directly answer their introductory questions. Instead, they allow their poems to speak for themselves and add an instructive list of things students can do today to curb some of the judgment associated with appearance:

Today, try to be more open-minded. Don't judge people based on their looks or failures. Everyone is fighting their own battles. Start a conversation with a stranger and actively listen. Give something nice to someone. Spread love around our school. Make someone's day. (Orlando Repertory Theatre, 2015)

When the instructions, the text of which scrolled upwards across the screen as the students narrated, ended, a video of their performance piece, "I am a woman" plays. In it, students address notions of performing gender on a daily basis, opening their piece with the statement, "In society, in the media, at home, at school, I am expected to wear a mask." As we discussed the ways people perform gender, the students continued to revisit this idea of the mask, which served as the metaphorical costume piece necessary for the performance. Credits run at the end of the film.

Due to technological and time constraints, I edited the digital story outside of the classroom. To ensure their voices still affected the final video, I sought their advice on the progression of works and images before beginning to edit and throughout the editing process. We held several pre-screenings, which allowed the students to see the progress on the digital story and offer feedback. I enabled them to take the lead in the critique process, thereby allowing them to discuss amongst themselves the order and montage of the digital story. I used their decisions to edit the digital story in a way that represented and respected their collective vision. In this way, I hoped to retain a sense of their authorship throughout the entirety of the creation process.

On our final day together, we viewed the completed digital story and reflected back on the process of its creation and the creation and performances of their live theatre piece. In addition to the Women's Empowerment Summit, they had conducted their live performance piece for an enthusiastic crowd at a youth advocacy summit, and now they sought avenues to present their digital story. The students and I discussed places where we felt the digital story could be shown, in order to further the reach of their message. The students suggested showcasing all or some of it on the morning announcements for the entire school, sharing it with local faith and community groups, and sharing it with the class's counterpart – the boy's leadership class. Of all the possibilities discussed, the students seemed especially keen to share it with this group of young males. As one student said in our final meeting, "They are the ones who might never have heard this story before." Time constraints in my schedule didn't allow me to stay with the students long enough to share their video with other students or community members, so the decision to share fell to them and their classroom teacher. With the remainder of our time in that last class period, students reflected on their personal growth throughout the creation process and completed post-residency surveys.

Creative Action and Creating Change: Reflections and Outcomes

In their post-residency surveys, 11 students of the total 16 noted they "strongly agree" with the statement, "I want to make a change." Another four selected "agree" and two selected "neither agree nor disagree." Six students selected "strongly agree" for the sentence, "I believe I am capable of making change in my society," six choose "agree" and four chose "neither agree nor disagree." When asked if they "believe that performance² can be used as a tool for social change," eight students selected "strongly agree," four students selected "agree" and two students selected "neither agree nor disagree."

² Performance here should be understood as both theatrical and digital performance.

Additional student comments help clarify their ongoing connection to ideas of women's empowerment. Six students at the end of the semester questioned they ways they can continue this research personally and academically.

Students' closing remarks further express the depth of their connection to this project and the project's effect at helping students see themselves as agents of change within their society. In a pre-survey questionnaire, one student asked herself, "Am I fit to be a leader? Can I really make a difference in this community?" When I asked her to answer this question at the end of the residency, she replied, "At first I was unsure, but now I am extremely confident that I am powerful." Another student, when asked what she learned by participating in this project responded, "I learned there are issues going on in our society that we cannot contribute to unless we make ourselves aware. We cannot adopt the mindset that someone else will fight the battles because there will be no change. If you think something is wrong, then do something about it."

The residency ultimately aimed to give the students a place to create a work that helped them envision their roles as leaders in their community by giving voice to a topic they viewed as important. In the process, they conducted research that they then turned into written thought and ultimately a final multi-modal work of art that used digital storytelling and performance as a basis by which to structure and analyze their findings. Students were asked to analyze patterns of media-driven understandings of femininity and gender performance and then to generate new content and knowledge from unique perspectives. They needed to determine their views on the subject to be able to decide how best to advocate for their beliefs. Ultimately, I believe the residency was a success. Students created a performance and digital story that covered a broad range of topics within understandings of gender performance and identity.

References

- Alexander, B. (2011). *The new digital storytelling: Creating narratives with new media*. Santa Barbara, CA: Praeger.
- Fletcher, C., & Cambre, C. (2009). Digital storytelling and implicated scholarship in the classroom. *Journal of Canadian Studies*, 43(1), 109–130. https://doi.org/10.3138/jcs.43.1.109
- Freire, P. (1988). Creating alternative research methods: Learning to do it by doing it. In S. Kemmis & R McTaggart (Eds.), *The action research reader* (pp. 291–313). Geelong, Vic.: Deakin University Press.
- Freire, P. (2002). *Pedagogy of the oppressed* (30th anniversary Ed.). New York, NY: Continuum International Publishing Group, Inc.
- Helff, S., & Woletz, J. (2009) Narrating Euro-African life in digital space. In J. Hartley & K. McWilliam (Eds.) Story circle: Digital storytelling around the world (pp. 131–143). Malden, MA: Wiley-Blackwell.
- hooks, b. (1994). Teaching to transgress. New York, NY: Routledge.
- Lambert, J. (2009). *Digital storytelling: Capturing lives, creating community*. Berkley, CA: Digital Diner.
- McTaggart, R. (Ed.) (1997). Participatory action research: International contexts and consequences. New York, NY: State University of New York Press.
- Nicholson, S. (1971). How not to treat children: The theory of loose parts. *Landscape Architecture*, 62, 30–34. https://doi.org/10.1111/j.2044-8295.1971.tb02047.x
- Orlando Repertory Theatre. (Producer). (2014). I am a woman [Performance].
- Orlando Repertory Theatre. (Producer). (2015). You are who you are. [Motion picture].
- Prentki, T. and Selman, J. (2000). *Popular theatre in political culture: Britain and Canada in focus*. Portland, OR: Intellect Books.
- Smolucha, F. (1992). A reconstruction of Vygotsky's theory of creativity. *Creativity Research Journal*, 5(1), 49–67. https://doi.org/10.1080/10400419209534422
- Stefik, M. (2011). We digital sensemakers. In T. Bartscherer & R. Coover (Eds.) Switching codes: Thinking through digital technology in the humanities and the arts (pp. 38– 60). Chicago, IL: University of Chicago Press.
- UN Women. (2013). UN Women ad series reveals widespread sexism. Retrieved from http://www.unwomen.org/en/news/stories/2013/10/women-should-ads.
- Vygotsky, L. (2004) Imagination and creativity in childhood. *Journal of Russian and East European Psychology*, 42(1), 7–97. https://doi.org/10.1080/10610405.2004.11059210
- Vygotsky, L. (2011) Imagination and creativity in the adolescent. *Soviet Psychology*, 29(1), 73–88. https://doi.org/10.2753/RPO1061-0405290173
- Vygotsky, L. (1987) Imagination and its development in childhood. In R. W. Rieber & A. A. Carton (Eds.) *The collected works of L. S. Vygotsky volume 1: Problems of general psychology, including the volume thinking and speech* (pp. 339–349). New York, NY: Plenum Press.

Corresponding Author: Amanda Hill **Contact email:** ahill5@stmarytx.edu

Creative Confrontations: Exploring Activism, Surveillance, and Censorship in China and the United States

Elizabeth A. Brunner, Idaho State University, USA Kevin M. DeLuca, University of Utah, USA

Abstract

Extensive surveillance networks, or *the Internet-enabled global surveillance societies (GSS)*, know no political borders. This paper turns to a country well acquainted with surveillance and censorship as well as a country engaged in frequent protest – China – to discuss what rhetorical devices citizens imbricated in the GSS can deploy to create practices of resistance. We ask the following question herein: *what rhetorical devices are citizens imbricated in the GSS deploying to create practices of resistance and how can a networked approach to activism aid in thwarting surveillance?* We think through these examples using Deleuze's concept of the *assemblage* and propose that creativity in the form of collective authorship, working under the cover of the commonplace, and organizing rhizomatically across wild public screens all prove to be useful tools for protestors surrounded by surveillance.

Keywords: activism, global surveillance, assemblages, U.S., China

In downtown Chengdu, statues wearing air masks stood silently as pedestrians walked through the smog-saturated air that permeated the city in the early weeks of December 2016. These numerous immobile figures being used to protest air pollution were exempt from arrest. Images of the statues traveled quickly across the globe, appearing on social media feeds and news outlets alike. They often accompanied stories about the persistent and severe smog that was plaguing the country. The force of the images can be found in their circulation far beyond the streets of Chengdu where massive demonstrations were planned but quashed when the government deployed police officers and barricades to prevent any organized unrest.

Thus, creative forms of protest such as the masked statues were integral to activists. Images of the statues were easily recognized as a form of protest because fellow activists in other cities had also used masks in their protests. Chengdu's creative protests quickly spread. Hundreds of miles away in the home of the world-famous terra cotta warriors, 800 stone lions on the Xi'an Academy of Fine Arts campus were fitted with the same masks. They, too, functioned as stalwart protestor's cleverly evading arrest. Though they remained stationary, images of the masked lions spread rapidly across social media, appearing alongside the statues and detained artists in Chengdu. Shortly thereafter, images of masked zodiac sculptures in Beijing began appearing in social media feeds and international news media. These images appeared alongside a growing number of people posting selfies immersed in smog. Despite restrictions, censorship, barricades, and police presence, protestors were able to deploy creative tactics to persistently demonstrate.

The pollution in December 2016 was particularly bad and spread across much of China's northern region. Many people wore coverings over their faces each day to protect their lungs from the dangerous PM 2.5 (the particulate matter known to cause cancer) that hung in the air. Passers-by snapped photos of outdoor installations across the country and shared them with friends and followers on social media. Before long, they appeared on news and culture websites from *China Daily* and *The Shanghaiist* to the U.K.'s *Daily Mail*, prompting conversations, increasing awareness, and putting authorities charged with doing something about it in the public spotlight.

These innovative protests occurred, in part, as a response to the contemporary media environment in China. Since President Xi Jinping took office in 2013, he has instituted strategic censorship and surveillance programs that have become progressively difficult to circumvent and avoid, though users continue to find ways around the perpetually shifting restrictions. These censorship programs, however, have prompted some users to create new methods and tactics of protest that change along with the constantly shifting media environment. As De Kloet and Fung (2017) argue, "Censorship in China is also a creative force" (p. 86).

China's Internet restrictions and surveillance receive consistent international attention in news outlets (Borggreen, 2016; Flood, 2013; Kan, 2014) and academic studies (Ng, 2013; Tong, 2009). China is not, however, alone. Most countries, including the United States, carry out extensive surveillance programs (Gorman, 2005). The 2013 Snowden leaks and the more recent 2017 WikiLeaks document dump reveal that though U.S. citizens may not be overtly censored, they are under constant surveillance, as are many of their Western democratic counterparts. Extensive surveillance networks, or more specifically what DeLuca, Brunner, and Sun (2016) term the *Internet-enabled global surveillance society, or GSS*, knows no political borders and can record people's every email, social media post, and conversation that occurs wherever smartphones are present. Recent leaks have drawn global attention and raised awareness, but this issue is much older than 2013. Reports as early as 2007 generated by the U.S.-based

Electronic Privacy Information Center coded the United States and United Kingdom as under "endemic surveillance". According to the report, there was an increasing trend amongst governments to archive data on the geographic, communications and financial records of all their citizens and residents. This trend led to the conclusion that all citizens, regardless of legal status, are under suspicion (Zetter, 2007).

Ten years later, NSA whistleblower Edward Snowden revealed additional information that demonstrated the massive growth of surveillance in the United States, often in collusion with other countries, including the United Kingdom, Canada, Australia, and New Zealand (Greenwald, 2014b, pp. 23, 47). The information Snowden leaked made evident this vast breach of privacy is part of a larger international network.

The 2017 WikiLeaks documents reveal that the United States' CIA had been honing its spying capabilities since the 2013 Snowden scandal. Their eyes and ears now extend into people's pockets. The devices that people carry with them everywhere to communicate, get directions, take and share photos, remind them of appointments, and act as an alarm clock can be hacked and used to record the most intimate of conversations and communications.

In the face of the GSS, all citizens must develop new tools and practices to preserve freedoms, which leads us to ask: *how are citizens imbricated in the GSS deploying rhetorical devices to engage in creative practices of resistance? Further, how can creative activisms aid in thwarting surveillance?* This question is of particular importance during a period of time when social unrest is growing across the globe and the right to protest is being increasingly constricted. To answer this, we turn to a country that has long dealt with surveillance– China – and various forms of creative environmental protests that have erupted therein. We think through these examples using Deleuze and Guattari's (1987) concept of the *assemblage* and propose that creativity in the form of collective authorship, working under cover of the commonplace, and organizing rhizomatically across wild public screens – screens from smartphones to billboards that capture attention but do not guarantee rational conversation, safe spaces for dialogue, or the transmission of accurate information – all prove to be useful tools for protestors immersed in surveillance.

Censorship, Creative Proliferations, and Movement

What can users do to circumvent censorship if movement across platforms is being surveilled and stopped? Censorship practices cannot be considered in isolation, for they are always operationalized within a web of relations and associations, and their impacts beg a more complicated portrait that recognizes the sophistication of certain practices alongside the utter chaos of communication. As Foucault (1990) argued in the *History of Sexuality*, censorship often has a function opposite its intended one. Rather than reducing conversations, censorship creates more communication, or what Foucault (1990) would consider discursive explosions. When one word is blocked, multiple new words are invented. When images are forbidden, a simple addition to the composition transforms it enough to elide automatic censors. Users have also found that substituting ultra-common words such as *stroll (sanbu)* in the place of ones likely to draw attention like *protest (kangyi)* or demonstration (*youxing*) can help to evade detection and deletion. This works with images as well. Using selfies in facemasks to protest against air pollution cannot be differentiated from images of people wearing them for protection, and thus travel largely unobstructed across social media platforms. In examining the creative methods that prove powerful in combatting censorship and surveillance in China, what becomes apparent is that they often run contradictory to classic Western definitions of creativity, which stress individualism, uniqueness, and originality. Creative measures in China employ dramatically different tactics that rely on the collective, the commonplace, and networked dispersed movement. These different manifestations of creativity provide methods essential to activism in a surveilled and pan mediated world. When deploying tactics over wild public screens, moving ideas via the mundane proves to be a powerful method of concealment (Brunner & DeLuca, 2016; DeLuca, Sun, & Peeples, 2011). Camouflaging calls to protest by substituting the word protest for stroll over China's wild networks, which link millions of users, creates cover for those channeling outrage into awareness, protest, and action. Similarly, cultivating creativity that moves and morphs via the masses is a potent means to decentralize activism – a tactic essential to avoid attention, arrest, or silencing in a hyper-surveilled society. The problems are 1) the censorship of sensitive content and 2) the censorship of that which incites movement. Yet, if calls to activism can be freed of attachments that may draw increased surveillance by implicating a collective rather than an individual, then activist efforts have a better chance of spreading. Second, embracing creativity as a collective process in a constant state of change is important to the survival of any given message because it allows it to dodge censors and circulate more widely.

One can witness this in the example of Zhou Yongkang. When Zhou, China's former security czar, was arrested in 2015, social media users knew that posts that included his name would likely be censored (and they were) so netizens used the nickname Master Kang to refer to Zhou. Master Kang is a very popular brand of noodles across China, so to camouflage this reference is to give the pseudonym a longer life span and greater travel. Netizens used the cover of the commonplace to camouflage their critiques. Other users inspired by this nickname creatively shortened Master Kang to fangbianmian (instant noodles), a word far too common to be automatically censored. This allowed it to spread further and complicated measures to erase or trace discourses. Then, others who joined in on the conversation turned the words into a discourse of images, and pictures of instant noodle cups popped up on social media platforms to stand in for the censored name. Some users created critiques of Zhou that mimicked instant noodle advertisements. Here, the mundane ran wild across networks and the persistent creativity of the masses allowed conversations to continue and spread quickly in a panmediated environment despite rules designed to prevent mass online mobilizations. Movement, change, and creativity among the masses made looking for inflammatory posts increasingly more difficult as they tumbled and spread across platforms.

Pan Mediation, Assemblages, and Opportunities for Activism

This form of creativity is enabled by the very same systems that enable surveillance. As the Internet becomes the central organizing principle of post-human societies, social theorists have reimagined society literally and metaphorically as a network (Benkler, 2006; Castells, 2000; DeLanda, 2006).¹

¹ Yochai Benkler, *The Wealth of Networks: How Social Production Transforms Markets and Freedom* (New Haven, Connecticut: Yale University Press, 2007); Manuel Castells, *Networks of Outrage and Hope: Social Movements in the Internet Age*, 1st ed. (Boston: Polity, 2012); Manuel DeLanda, *A New Philosophy of Society: Assemblage Theory and Social Complexity*, 1st ed. (New York City: Continuum, 2006).

Benkler compellingly demonstrated how the Internet has enabled the transformation of the industrial economy into a "networked information economy" that "has made human creativity and the economics of information itself the core structuring facts" (2006, p. 3). Technology is central. Internet platforms enable individuals to reach millions of others and to engage in "effective, large-scale cooperative efforts—peer production of information, knowledge, and culture" (p. 3). As Benkler, Castells, and others note, this radical decentralization puts individuals outside of easy institutional control, enabling efforts that bypass political and corporate authorities.

In the face of the GSS, these theories would benefit from amendments and elaborations. Thus, we turn to Deleuze (with Guattari, 1987, 1990) and his concept of *assemblage* to augment existing scholarship, especially as it relates to activism. Assemblages emphasize connections and relationships between and among *things*, not simply among human actors, but among books, language, action, bodies, machines, and so forth. Assemblages are always in a state of change, or *becoming*, in that they are always growing, extending, shrinking, moving, and transforming. Thus, people can become part of human-mechanic assemblages with smartphones and social media networks to become activists. People can also enter theses assemblages as government employees, human censors, and surveillance camera installers. The man-machine systems enable surveillance at the same time they enable activism. These technologies are not inherently democratic.

As the world's largest Internet nation, China's networks are denser, move faster, and change more rapidly, which impacts activism. According to data, "China has been at the forefront of internet access for almost a decade" (Robson, 2017, para. 7). Chinese Internet users grew from 22.5 million in 2000 to over 720 million in 2016, while the U.S. grew from 121 million to 286 million in the same period. As of 2016, China had more Internet users than the next three largest countries combined - the United States, India, and Japan (Internet Live Statistics, 2016). Of these, 313 million are monthly active users on Weibo and 800 million on Weixin. According to anthropologist Tom McDonald, "It is easy for us to assume that 'the Chinese Internet' ought to be a very drab and boring and constraining place, whereas actually, Chinese internet users are incredibly creative and the internet is incredibly lively" (quoted in Robson, 2017, para. 3). Citizens along with smartphones and social media platforms have new potentials to become what DeLuca, Lawson, and Sun (2012) term decentered knots of world-making capable of powerful activist practices who can disseminate information, stoke dissent, and sway both national and international conversations. Though Chinese censorship technology (largely produced by Western companies for surveillance purposes) thwarts open communication, it does not silence it. Social media platforms like Weibo and Weixin are wild enough to offer both possibilities for surveillance and activism via persistent creative methods. The concept of assemblages more accurately mirrors the contemporary social media environment and therefore can help scholars to trace creative tactics.

According to Deleuze and Guattari (1987), an assemblage is a multiplicity, a rhizome, and a body without organs. An assemblage is never singular and is marked by becoming, by movement. The movement of the assemblage is integral to understanding the concept. Deleuze and Guattari (1987) draw attention to movement, or "Flows of intensity" (p. 162). Activism in China moves wildly across networked across public screens, connecting people in the process of becoming-activists, who create, spread, and transform messages about air pollution or proposed chemical plants using images, memes, and wordplay. Movement, described by Deleuze and Guattari (1987) as *becoming*, or *lines of flight* is integral to the assemblage. According to Deleuze and Guattari (1987), movement begets movement: and "freeing lines of

flight" causes "conjugated flows to pass and escape and [bring] forth continuous intensities" (p. 161). Movement is an asset for activists and, thus, deserves scholarly attention. People must engage on platforms, look, transform, and share critiques. Memes, images, gifs and puns, as they tumble across the Internet, can take on new iterations, lose traceable parts, and masquerade as the mundane while doing potent political work, which is why activists engage them. Their erratic flight paths as they bounce between users offer temporary spaces where information can travel unhindered and below the radar. Movement begets movement on social media platforms, which constantly experience bursts of activity, expansion, and retraction. As this movement is occurring, activists can disseminate their messages covertly. For example, as was the case with the previous example of the arrest of China's security czar, Zhou Yongkang, people anticipated a surge of movement and, thus, developed ways to move their messages during this eruption undetected by using commonplace terms like *instant noodles* and references to brand name products that, prior to this, had no connection with Zhou.

Movement characterizes becomings and multiplicities, which Deleuze and Guattari (1987) stated, "*is continually transforming itself into a string of other multiplicities, according to its thresholds and doors*" (p. 249, italics in original). New becomings, new polyvocalities, multiplicities, and movement can be asset to activists seeking cover from the GSS. The massive amounts of data always in transit can provide pathways for those seeking to raise awareness, organize without detection, and spread information under the cover of chaos. Brunton & Nissenbaum (2015) described such tactics in their book, *Obfusaction,* which outlines ways to deluge surveillance measures using tactics like DDoS, bots, and other smoke screens in order to offer moments of unmonitored movement. Chinese users have learned these lessons out of necessity.

Finally, both deploying and studying activism via assemblages is productive because doing so takes into consideration the flatness of pan-mediated environments. Social media is an everchanging space where information moves via multitudes of moving pathways in all directions. The assemblage, which extends and connects rhizomatically and where movement occurs in many directions simultaneously, "has neither base nor superstructure, neither deep structure nor superficial structure; it flattens all of its dimensions onto a single plane of consistency upon which reciprocal presuppositions and mutual insertions play themselves out" (Deleuze & Guattari, 1987, p. 90). Though the GSS attempts to exert a hierarchy through the practice of surveillance, social media are flat, connecting users laterally. If the GSS attempts to stand above and monitor the situation, activist efforts can remain undetected if they travel in the guise of everyday words, common phrases, and advertisements. Langlois et al. (2009) used Deleuze and Guattari to argue that networks are articulated in a rhizomatic way that link, assemble, connect, "thus hybridizing diverse code (platform, software, networks, informational dynamics, et cetera) and politics (political discourses, political movements, political cultures, politicians, citizens, et cetera) elements and actors" (p. 416). These moving, shifting, morphing, hybridizing networks create tangles of becomings over which information can move and transform.

The force of creativity over wild public screens feeds off the movement inherent in assemblages, the masses, the ability to channel flows of intensity and conjunctions of affects. As politically charged messages move over the variegated terrain of social media platforms, their constant state of becoming as they pass through the hands of creative users eager to transform them, connect to other discourses, and embrace multiplicity leads to a proliferation of spin-offs, reinterpretations, and appropriations that, too, are caught up in movements and flows. The concept of assemblages and multiplicities can help to understand how creativity

works within networks to circumvent surveillance. In the remainder of this essay, we will describe practices of resistance through case studies to illustrate how a networked approach to activism can be used to thwart surveillance.

Deploying Creative Measures across Pan mediated Networks

In making the argument that deploying creative measures over pan-mediated networks is important, we are not saying that measures that are more overt should be abandoned. Creative measures of all sorts must be deployed to monkey wrench the system, raise awareness, and organize resistance. For example, in Beijing, designer Wang Zhijun drew attention to Beijing's persistent air pollution problem by transforming a pair of sneakers into a functioning air mask (China Daily, 2016). Another artist by the name of "Nut Brother" vacuumed the air around Beijing for 10 days and pressed the particulate matter he collected into a brick. Kong Ning created a dress out of facemasks and paraded her piece around the streets of Beijing, petitioning people to use mass transit instead of driving. These more overt creative measures are also important in helping people to think differently about environmental issues. What we are arguing here is that varieties of measures are necessary to cultivate citizen engagement within the oppressive surveillance regime known as the GSS. Social media has offered both the networks for surveillance and resistance.

Anonymity and the Creative Collective

Collective creators and anonymous actors are vital and a powerful force in a pan mediated hyper-surveilled world. Anonymous actors can leverage critiques most users registered with their real name would likely avoid. Activist authors, artists, and bloggers in China who seek to raise awareness about environmental issues have long used pseudonyms, including Lian Yue (the penname of Zhong Xiaoyong), who played an important role in disseminating information about a proposed para-Xylene (PX) plant in Xiamen, China in 2007. The outrage that ensued culminated in mass protest and, in the end, the people won. Officials scrapped plans for the project. Other cities, inspired by Xiamen's success, protested against similar projects, and anonymized users played an important role in organizing outrage online that often led to demonstrations in the streets.

The Chinese government has come to understand the power of anonymity, especially collective anonymity, and has waged a war against it online. In 2010, the Chinese government began requiring that people use their real names when registering cellphone numbers. Prior to that (and even after it), buying a SIM card was as easy as stopping by almost any Chinese-style bodega. Each year, the government tightened restrictions and from 2016 on, anyone who buys a SIM card must show a valid ID or passport regardless of their residency status in China. Still though, over "100 million SIM cards have not been registered with real names" (Shu, 2016, para. 2).

In 2012, the government extended this law to social media by requiring users on Sina Weibo – the most popular microblogging site at the time – to link their account to an ID or mobile phone number. The government did not, however, extend it beyond Weibo, so when Weixin (or WeChat) quickly supplanted Weibo as the most popular social media platform, it offered users less stringent registration policies. Realizing the need to extend their policy, in 2014 the government mandated that all apps use real name registration. The glitch was that the policies were originally implemented in such a way that typing in any ID number could easily circumvent it. As one "Sina Tech commenter put it: 'I'm real-name registered, but it's

somebody else's real name'" (quoted in Custer, 2016, para. 6). Furthermore, registering users is not cost-effective for tech companies who have to pay for expensive software and, thus, implement only the bare minimum (Shu, 2016). Thus, while the registration process did hamper the rampant use of pseudonyms and made remaining anonymous more difficult, it has not made it impossible.

Despite all of these restrictions and rules, anonymity can still be deployed. During the December 2016 air pollution protests that spread across the nation, those involved in covering public statues in Chengdu, Xi'an, and the Beijing zoo with facemasks did so in the cover of darkness, at night. The installations were connected by the uniformity of the act as well as their rhizomatic spread over QQ, Weixin, and Weibo. Before long local news and international press outlets began covering the story and this coverage popped up on people's Facebook and Twitter feeds (which are not accessible without a VPN in China) pulsating through moving assemblages. Anonymous protests subvert the individual to become activist assemblages that take advantage of the "flows of intensity" and "conjunctions of affect" that create temporary relationships between users motivated by concern, anxieties, fear, and anger over air pollution. As anonymity on platforms is increasingly restricted, activists find new means of remaining anonymous. They deploy creative interventions in the form of image events and installations and depend upon fellow citizens to snap and share photos and, in doing so, their activist message.

Moving Amidst the Mundane

Creative iterations, as they move through assemblages, can avoid drawing the attention of the GSS via the cover of the commonplace. As was previously discussed, many protestors avoided censorship while organizing marches by substituting the word "stroll" (散步) for "protest" (抗议). By using a common word - stroll - they largely avoided detection. This is but one example of the ways in which Chinese users employ coded language to avoid drawing attention. The Chinese language, because it depends on tone for meaning, is rife with homonyms. When selecting a homonym for censored words, users are quick to adopt common words to replace the sensitive ones. One such example is "brickspert". The word is a play on the word *expert* (专家 zhuānjiā), but replaces the first character with a homonym meaning "brick" (砖). Bricksperts are defined as "Experts who are beholden to government or corporate interests.... Bricksperts often downplay health and safety risks and justify difficult economic conditions" (China Digital Times, 2017a). When used, the term is calling attention to government corruption and the ways in which money can influence permitting processes, including permits for companies that will bring tax revenue and leave the town with toxic pollutants. Another popular homonym – medicine-wicked-chrysanthemum (药奸菊 yào jiān $j\dot{u}$) – is a nonsensical phrase that "refers to the shortened name of the similar-sounding State Food and Drug Administration (药监局, or 国家食品药品监督管理局)" (China Digital Times, 2017b). This homonym allowed users to analyze the Food and Drug Administration without drawing attention when it was found that infant formula tainted with melamine had been widely distributed in China, causing infants to fall sick. The scandal created panic among new mothers, who had to battle the censors to communicate over social media networks. Therefore, this homonym, which was camouflaged by its use of common characters, allowed people to continue communicating.²

² *China Digital Times*' "grass-mud horse" lexicon has been cataloguing such terms for several years. The name of the database itself is one of the more popular homonyms to sweep across the nation.

Memes, too, are a useful means of working within the mundane to sidestep detection by the GSS. We can see this in a number of instances, including the rhizomatic protests against air pollution in Beijing. People have begun the practice of taking pictures of famous vistas across the city when the smog is too dense to see much of anything. Users then employ simple apps to draw the buildings – whether they be the entrance to the Forbidden City, the CCTV building, or the Bird's Nest – and post them to their social media accounts, drawing attention to the density of the pollution and its ability to render the architecture, historical icons, and cultural artifacts of a city as big and important as Beijing invisible. The images move largely undetected because they are essentially images of grayness, which are difficult to search for or auto-censor. Furthermore, when many users engage in activism via the commonplace and mundane simultaneously, the message has the ability to spread everywhere without drawing attention to any single user. Sifting through the millions of posts uploaded every second to find these images is an almost impossible task.³

Another example of utilizing the mundane as cover comes from the protests that erupted in Shifang, China in 2012 against a planned molybdenum copper plant. As the crowds grew, police officers were deployed to quash the protests. Of course, images documenting the events were uploaded onto social media. An image featuring a police officer by the name of Liu Bo charging at a small crowd with his baton raised and a riot shield strapped to his forearm garnered a great deal of attention (Levine, 2012). It was widely shared in its original format, but attempts to eradicate it from the Internet were thwarted when people used simple apps to cut out images of his body and insert it into famous fight scenes with superstars such as Jackie Chan and Mark Wahlberg. These fight scenes functioned as cover for a political statement because they are widely shared and innocuous. Liu Bo, who came to be known as "fat police officer", traveled quickly and far, creating "a powerful, albeit brief, cultural wave across the Web" (Levine, 2012, para. 12). As An Xiao Mina, artist, meme expert, and blogger has argued, "These images by themselves can't do anything; but when you look at past social movements, often it is images or graphics that keep a message alive" (quoted in Levine, 2012, para. 16). They do so by employing the commonplace as shelter and transforming as they move. Liu Bo makes appearances in different scenes. Viewers recognize Liu Bo, they associate it with the Shifang protests, with a government that suppresses dissent, with an economy that takes precedent over the environment, and Liu Bo can travel under the cover of the commonplace action adventure movie stills from popular films that would likely not ever draw the attention of censors or surveillance systems.

Emojis, too, can help users elide censors, as was the case with feminist groups who, after the Weibo and Weixin accounts for Feminist Voices were shut down on International Women's Day in 2018, shared two emoji's – one of a bowl of rice and another of a bunny, which together form mi tu (米兔), a homophone for #metoo (Andersen, 2018). Creativity thrives in restricted environments.

Hierarchies Flattened

Scholars have discussed memes in terms of culture jamming and activism (Harold, 2004), materialist rhetoric (Johnson, 2007), and even the Ebola virus (Marcus & Singer, 2017) but

Grass mud horse (cao ni ma / 草泥马) is a homonym for (肏你妈) or motherfucker and was taken up as a moniker by Netizens bucking the system.

³ See also the cases of the river crabs wearing Rolex watches, grass mud horse, and "fart people" (Link & Qiang, 2013).

little attention has been paid to how they can function as a rhetorical tool to subvert the GSS across political boundaries. Memes such as the ones discussed above create fleeting connections between users that splinter out rhizomatically as they are reposted, shared, saved, and deleted. When memes are shared via social media, they move quickly, connecting people who otherwise have no relationship, at least for a moment. As people share images, transform them, and repost them, they become widely distributed in various iterations. Since the inception of social media, scholars have highlighted users' ability to create and share information, thereby challenging the more hierarchical dissemination of information that occurs with traditional media outlets. The flattened structure of the Internet aids those seeking to avoid attention while living in the GSS.

Memes, which travel across social media networks, link one semiotic chain to another—one set of memes of the "fat police officer" link with memes of the cultural icon, Jackie Chan. They link smoggy shots of Tiananmen Square with smoggy portraits of the CCTV building. The appearance of masked statues takes on a different meaning when users find that they occurred not just across one city, but also across the nation. Memes use artistic creativity, the science of computer programming, the network of the Internet, and weave in social struggles. They do *not* emphasize the individual creative genius.

Memes are a form of postmodern conversation where "[t]here is no ideal speaker- listener" (Deleuze & Guattari, 1987, p. 7). No one person stands out and becomes the star. Rather, conversations proliferate because they are linked via chains, not hierarchies.

In protests or social movements, never is a one meme singled out as *the* meme that raised awareness across the country about air pollution or caused officials to acquiesce to the people's demands after a protest erupted. Rather, memes work in concert with one another and are dependent upon the larger system within which they reside.

Conclusion: Deploying Creativity amidst the GSS

As a country with frequent protests and high social engagement, especially over online networks, China is a particularly useful case study. Whereas U.S. citizens only more recently definitively learned about these massive surveillance systems that house millions of terabytes of data in places like Bluffdale, Utah, Chinese citizens have long been aware of the fact that they are being surveilled. Travel under the GSS is dangerous, and Chinese activists are well aware of this, which is why they have turned to the aforementioned tactics. Environmental NGOs (ENGOs) in China cannot lead protests the way 360.org or the Sierra Club can against the Keystone XL pipeline in the U.S. or they would be shut down immediately. International ENGOs such as Greenpeace are well aware of these repercussions, and thus deploy creative interventions. For example, rather than stage a mass demonstration where thousands gather to demand that a dyeing plant that is polluting the local water supply be shut down, they deploy a multi-faceted campaign where they collect data from the waterways under the cover of night to prove the plant is polluting. They also stage image events, including one in which they invited fashion models to the factories dumping chemicals into streams and have them pose next to the blackened water or near barrels of toxic chemicals. These images are then used in a series of ads aimed at customers of the brands using such dyes who are engaged on social media (Brunner & DeLuca, 2016). They connect their message by hijacking hashtags used to promote the brand, which allows them to infiltrate their target audiences without having to forge new networks. There is no doubt that Greenpeace is being surveilled, but networked tactics,

anonymous actors, the cover of darkness and the mundane, help to evade censorship and shutdown.

The practices of Chinese citizens in the age of the GSS can show activists worldwide how to play these protean platforms to elide, elude, and defy ubiquitous surveillance systems. This scholarship adds to the existing scholarship on memes an Internet intervention by illustrating their importance in activism under the GSS. Awareness of the GSS should motivate activists everywhere contesting corporate and governmental domination to take surveillance and the dark side of the Internet seriously (Deibert, 2013) in addition to exercising the creativity and joy of play. As the example of Chinese activism demonstrates, in the GSS tools and tactics of evasion and insurgency, creativity and networking, become imperatives for making changes and imagining alternative worlds.

Data can be collected and information can be censored, but wildness still exists within the crisscrossing pathways that carry language in creative iterations and images as they transform information into nonverbal resistances and awareness-raising movements. As Shirky (2008) stated, "Revolution doesn't happen when society adopts new technologies—it happens when society adopts new behaviors" (p. 160). Creativity that embraces collective authorship and movement amidst the cover of the mundane can provide an antidote to the architecture of the GSS by way of invention. The case study of China provides a productive model for the rest of the world, in part due to cultural differences that privilege the collective over the individual, that view creativity as a constant collaborative process that builds on and recognizes the work of others, and which has embraced the very same platform over which they are being surveilled.

References

- Benkler, Y. (2006). *The wealth of networks: How social production transforms markets and freedom*. New Haven, CT: Yale University Press.
- Borggreen, C. (2016, July 12). EU trade commissioner criticizes online censorship in China. Retrieved July 23, 2016, from http://www.project-disco.org/informationflow/071216- eu-trade-commissioner-criticises-online-censorshipchina/#.V5Ps75MrLow
- Brunner, E., & DeLuca, K. M. (2016). The argumentative force of image networks:
 Greenpeace's pan mediated global detox campaign. *Argumentation and Advocacy*, 52(4), 281–299. Brunton, F., & Nissenbaum, H. F. (2015). *Obfuscation: A user's guide for privacy and protest*. Cambridge, MA: MIT Press.
- Castells, M. (2000). The rise of the network society: The information age. Hoboken, NJ: Wiley. China Daily. (2016, December 22). Beijing designer turns sneakers into smog masks. China Daily. Retrieved from http://www.chinadaily.com.cn/bizchina/2016-12/22/content_27744412.htm
- China Digital Times. (2017a). Brickspert. Retrieved March 25, 2017, from https://chinadigitaltimes.net/space/Brickspert
- China Digital Times. (2017b). Medicine wicked chrysanthemum. Retrieved March 25, 2017, from https://chinadigitaltimes.net/space/Medicine_Wicked_Chrysanthemum
- Custer, C. (2016, June 1). China to start seriously enforcing real-name mobile registration, government claims. Retrieved March 22, 2017, from https://www.techinasia.com/china-start-enforcing-realname-mobile-registration-government-claims
- DeLanda, M. (2006). *A new philosophy of society: assemblage theory and social complexity.* New York, NY: Continuum.
- Deleuze, G., & Guattari, F. (1987). *A thousand plateaus: Capitalism and schizophrenia*. Minneapolis, MN: University of Minnesota Press.
- DeLuca, K. M., Brunner, E., & Sun, Y. (2016). Weibo, WeChat, and the transformative events of environmental activism on China's wild public screens. *International Journal of Communication*, *10*, 321–339.
- DeLuca, K. M., Lawson, S., & Sun, Y. (2012). Occupy Wall Street on the public screens of social media: The many framings of the birth of a protest movement. *Communication, Culture & Critique*, 5(4), 483–509. https://doi.org/10.1111/j.1753-9137.2012.01141.x
- DeLuca, K. M., Sun, Y., & Peeples, J. (2011). Wild public screens and image events from Seattle to China: Using social media to broadcast activism beyond the confines of democracy. *Transnational Protests and the Media*. Retrieved from https://digitalcommons.usu.edu/lpsc_facpub/17
- Flood, A. (2013, May 3). Writers around the world call on China to respect freedom of expression. *The Guardian*. Retrieved from http://www.guardian.co.uk/books/2013/may/03/writers-world-china-freedomexpression
- Foucault, M. (1990). *The history of sexuality, vol. 1: An introduction*. (R. Hurley, Trans.). New York, NY: Vintage.

- Gorman, G. E. (2005). China-bashing in the internet censorship wars. *Online Information Review*, 29(5), 453–456. https://doi.org/10.1108/14684520510628855
- Harold, C. (2004). Pranking rhetoric: "culture jamming" as media activism. *Critical Studies in Media Communication*, 21(3), 189–211. https://doi.org/10.1080/0739318042000212693
- Internet Live Statistics. (2016). Number of internet users. Retrieved March 11, 2017, from http://www.internetlivestats.com/internet-users/
- Johnson, D. (2007). Mapping the meme: A geographical approach to materialist rhetorical criticism. *Communication and Critical/Cultural Studies*, 4(1), 27–50. https://doi.org/10.1080/14791420601138286
- Kan, M. (2014, June 11). Behind the Great Firewall: What it's really like to log on from China. *Network World*. Retrieved June 21, 2014, from http://www.networkworld.com/article/2362051/access-control/behind-the-greatfirewall-what-its-really-like-to-log-on-from-china.html
- Kloet, J. de, & Fung, A. Y. H. (2017). Youth cultures in China. Malden, MA: Polity. Langlois, G., Elmer, G., McKelvey, F., & Devereaux, Z. (2009). Networked publics: The double articulation of code and politics on Facebook. Canadian Journal of Communication, 34(3). Retrieved from http://www.cjconline.ca/index.php/journal/article/view/2114
- Levine, J. (2012, September 4). Photoshopping dissent: Circumventing China's censors with internet memes. *The Atlantic*. Retrieved March 26, 2017, from https://www.theatlantic.com/international/archive/2012/09/photoshopping- dissent-circumventing-chinas-censors-with-internet-memes/261911/
- Link, P., & Qiang, X. (2013). From "fart people" to citizens. *Journal of Democracy*, 24(1), 79–85. https://doi.org/10.1353/jod.2013.0014
- Lu, S. (2015, September 4). Blue sky vanishes after Beijing's big parade. *CNN*. Retrieved March 11, 2017, from http://www.cnn.com/2015/09/04/asia/china-beijing-blue-sky-disappears-after-military-parade/
- Marcus, O. R., & Singer, M. (2017). Loving Ebola-chan: Internet memes in an epidemic. Media, Culture & Society, 39(3), 341–356. https://doi.org/10.1177/0163443716646174
- Ng, J. Q. (2013). Blocked on Weibo: what gets suppressed on China's version of Twitter (and why). New York, NY: The New Press.
- Saleem, S. (2016, March 10). WikiLeaks' CIA document dump will cause a ripple effect. Al Jazeera. Retrieved March 11, 2017, from http://www.aljazeera.com/indepth/opinion/2017/03/wikileaks-cia-document- dumpripple-effect-170309101620104.html
- Shirky, C. (2008). *Here comes everybody: The power of organizing without organizations*. New York, NY: Penguin Press.
- Shu, C. (2016, June 1). China attempts to reinforce real-name registration for Internet users. *Tech Crunch*. Retrieved March 21, 2017, from http://social.techcrunch.com/2016/06/01/china-attempts-to-reinforce-real-nameregistration-for-internet-users/

- Tong, J. (2009). Press self-censorship in China: A case study in the transformation of discourse. *Discourse & Society*, 20(5), 593–612. https://doi.org/10.1177/0957926509106412
- Zetter, K. (2007, December 31). World's Top Surveillance Societies. *Wired*. Retrieved July 24, 2016, from https://www.wired.com/2007/12/worlds-top-surv/

Corresponding author: Elizabeth A. Brunner Contact email: bruneliz@isu.edu

the iafor journal of psychology & the behavioral sciences

ISSN: 2187-0675