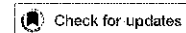


(DISCUSSION 5)

Prior to beginning work on this discussion, read Chapters 1 and 2 of the Hesse-Biber e-book, *Mixed Methods Research: Merging Theory with Practice*, and the two required articles for this week. Mixed methods is a current popular methodology. While this type of methodology is useful for some studies, because of its dual nature as both quantitative and qualitative, it is not effective or appropriate for all research.

For this discussion, you will consider the use of mixed methods for the topic you have chosen for your Research Proposal. In your initial post, apply the scientific method to your research topic by defining your research question and determining the method(s) necessary to answer that question. Compare the characteristics and appropriate uses of the different methods and explain if your research question could best be answered through qualitative or quantitative methods, or a mix of both. Identify the dominant method (quantitative or qualitative) for your proposed study. Explain whether or not a mixed methods approach is the best way to study the topic, demonstrating that the second method is not added as an afterthought or merely to impress journal editors who favor mixed methods. If you have decided not to use mixed methods, explain why the study is best completed with either a quantitative or qualitative focus. Justify your design choice and support your position with scholarly sources. Include a discussion explaining how you would apply ethical principles to your design to address concerns which may impact your research. Provide a substantive response. Please do not include the question prompt in your initial post.



Memory as a cognitive representation of post-traumatic growth

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ABSTRACT

Background and objectives: Previous studies on traumatic memory have primarily focused on the correlation between traumatic symptoms and negative memories, often utilizing the directed forgetting paradigm. Different from previous research, this study aimed to examine the correlation of post-traumatic growth (PTG) and positive memories, with the objective to explore the directed forgetting effect of positive material and its relationship with PTG.

Design: A 2 (PTG level: high vs. low) $\times$ 2 (instructions: To-Be-Forgotten vs. To-Be-Remembered) $\times$ 3 (word valence: positive vs. neutral vs. trauma related) mixed-factorial-designed experiment was applied.

Methods: Participants were 46 senior high-school students who had survived in the Sichuan earthquake in 2008. Participants were divided into two groups based on PTG: high ($n = 24$) and low ($n = 22$). Both groups were presented, and asked to recall, three word categories (positive, trauma-related, and neutral) following the directed forgetting paradigm.

Results: A mixed-design factorial ANOVA yielded a significant interaction effect of word valence and PTG group, with the high-PTG group recalling more positive words than the low-PTG group.

Conclusions: This was the first study to identify a key cognitive process of PTG by integrating the directed forgetting paradigm into an investigation of PTG.

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Introduction

Trauma, emotion, and memory

Many previous studies have shown that the mental health of individuals following trauma is strongly related to their recollection of the trauma. In particular, a breakdown in the ability to forget disturbing material appears to be common among trauma survivors, particularly for those with post-traumatic stress disorder (PTSD; Geraerts & McNally, 2008). A major symptom of PTSD is continuous flashbacks of trauma-related memories, which suggests that individuals might lack the ability to inhibit such memories. Moreover, individuals with PTSD tend to have impaired inhibitory control over memory (Catarino, Küpper, Werner-Seidler, Dalgleish, & Anderson, 2015).

However, the ability to forget information is a key component of efficient memory (Minnema & Knowlton, 2008). Furthermore, forgetting unwanted (e.g., traumatic or negative) memories acts as a defense mechanism against anxiety (Gailliot, Schmeichel, & Baumeister, 2006). Thus, researchers tend to view the capacity to forget as a protective mechanism which maintains one's mental health, and have kept exploring variables that might influence this capacity. Repeated encoding and retrieval of negative trauma-related memory are maladaptive symptoms of trauma (Aupperle,

Melrose, Stein, & Paulus, 2012; Cottencin et al., 2006; Geraerts & McNally, 2008) and participants with PTSD and Acute Stress Disorder showed impaired recognition of positive words, which indicates that their ability to retrieve positive memories was impaired (Bryant, Harvey, Dang, Sackville, & Basten, 1998).

The directed forgetting effect

In order to examine the relationship between trauma and memory, particularly in a traumatized group, researchers often employ the directed forgetting paradigm. Directed forgetting refers to the ability to forget certain information at will (Bjork, 1970; Bjork & Woodward, 1973). Researchers believe that emotional material is comparatively resistant to forgetting and remains easily accessible (Minnema & Knowlton, 2008); in other words, emotion appears to have an enhancing effect on memory. As such, previous research has shown that individuals who have experienced trauma have difficulty in learning and inhibitory functions (Aupperle et al., 2012). In this case, the directed forgetting paradigm is well suited to examine memory control following trauma (Geraerts & McNally, 2008) and individual differences in ability to keep disturbing memories or material out of consciousness (Brewin & Andrews, 1998).

The key feature of the directed forgetting paradigm is that, after the study material is presented, participants receive instructions to remember some of the information and forget the rest (Lehman, McKinley-Pace, Leonard, Thompson, & Johns, 2001). The cue for remembering and forgetting can be presented after each item (item cueing) or each list (list cueing). After a distracter task (normally answering basic arithmetic questions), participants are presented with a surprise task to recall and write down as many words as possible from both the to-be-remembered (TBR) and to-be-forgotten (TBF) material (Geraerts & McNally, 2008). If directed forgetting instructions are effective, participants demonstrate poor recall of the forget-cued items in the recall task (Lehman et al., 2001).

The directed forgetting effect largely depends on the emotional valence of the material. McNally, Metzger, Lasko, Clancy, and Pitman (1998) examined the directed forgetting of trauma-related, positive, and neutral words in patients with PTSD, traumatized individuals without PTSD, and a control group. In the PTSD group, the directed forgetting effect was observed for neutral and positive words, but not for trauma-related words. This result indicates that participants with PTSD were engaged in selective rehearsal of trauma-related material, but not for the other material.

Cognitive representations of post-traumatic growth

Post-traumatic growth (PTG) refers to the positive changes that arise after individuals grapple with extremely severe conditions (Calhoun & Tedeschi, 2000; Tedeschi & Calhoun, 1996). Whether or not a perceived PTG involves actual observable behavioral change remains controversial (Zoellner & Maercker, 2006). Researchers generally believe that the positive changes of PTG have two slightly related dimensions – a cognitive, subjective dimension and a behavioral, action-oriented dimension – as well as several related concepts, such as perceived PTG vs. actual PTG (Pat-Horenczyk & Brom, 2007). According to the findings of previous research, scholars have not yet settled on the significance of perceived PTG for recovery after trauma. Contradictory evidences were found regarding the relationship between perceptions of PTG and pathological outcomes. For example, a meta-analytic study has shown that both significant linear and curvilinear relationships were found between PTG and PTSD symptoms (Shakespeare-Finch & Lurie-Beck, 2014). In the present study, we used a self-report scale to measure PTG; as such, we focused on perceived cognitive growth (Pat-Horenczyk & Brom, 2007). Thus, we cannot say that the PTG measured in our study is representative of action growth (i.e., leading to adaptive behavioral adjustment).

A similar concept is benefit finding. Tennen and Affleck (2002) view benefit finding as the identification of benefit from adversity. Generally, benefit finding is believed to be a cognitive effort/process, while PTG is more likely to be seen as a result/outcome with a broader

meaning, including optimistic life philosophy, better relationships with others, and a coherent sense of self.

While most previous research has focused on the directed forgetting effect on PTSD, the present study attempted to reveal the difficulty in inhibitory functions of memories associated with PTG. The results from a meta-analysis (Shakespeare-Finch & Lurie-Beck, 2014) showed that PTG and PTSD can co-occur, and the potential for growth may be masked, and recovery may be limited or slowed if focus is only on PTSD. This was the reason why, in the current study, we explored the memory mechanism of PTG, just as previous researchers did with PTSD.

We cite three possible theories to build our hypotheses: First, according to the mood-congruency theory (Blaney, 1986; Bower, 1981; Rusting & Larsen, 1998), individuals who are in a positive mood state should find it easier to retrieve pleasant material from their memory, with this process serving as a strategy to alleviate negative moods (Rusting & DeHart, 2000). Second, according to information-processing theory, compared with non-emotional words, emotional words are processed in a more elaborate way (van Rijsbergen & Lalmas, 1996). This elaborate processing might be resistant to retrieval inhibition (upon which directed forgetting relies), impairing cognitive control. Third, a reduction in forgetting of positive emotional material might mean that such material activates the self-concept. High PTG individuals may possess a more positive self-concept, and studies have shown that retrieval-induced forgetting does not occur for self-relevant material (Neil Macrae & Roseveare, 2002).

Understanding the underlying cognitive process related to perceived growth is important, as the retrieval of positive memory is considered as a key emotion regulation strategy (Rusting & DeHart, 2000), and this retrieval process appears to be linked to the processes of benefit finding and positive reappraisal, which are crucial for perceived PTG. By activating positive associations in memory, and perhaps blocking the spread of negative emotion, people can learn to be resilient and well-adapted toward trauma (Rusting & DeHart, 2000). In addition, a better understanding of the cognitive mechanism is also helpful for clinical professionals working with trauma survivors. For instance, therapists can design targeted cognitive training programs for patients to identify and maximize any positive impact that adverse life experiences might have had on them (Jones et al., 2010). Moreover, a deeper understanding of the cognitive process underlying PTG can possibly restore patients' impaired capacity of inhibiting negative memories and retrieving positive ones, thus increasing the likelihood of reducing traumatic symptoms.

The present study

This primary goal of this study is to examine the relationship between PTG and memory of materials with different emotional valences: traumatic, positive, and neutral. We employed the "list method" paradigm to explore the directed forgetting effect.

In this study, as the reverse of the poor directed forgetting of negative trauma-related words found among patients with PTSD, participants with high PTG were expected to exhibit poor directed forgetting for positive words. Accordingly we proposed three hypotheses:

- (1) The directed forgetting effect of positive words for the high-PTG group will be lower than that observed in the low-PTG group; in other words, participants in the high-PTG group will be able to recall a larger number of positive words in the TBF condition compared to those in the low-PTG group.
- (2) The directed forgetting effect of trauma-related words for the high-PTG group will be stronger than that of the low-PTG group; thus, participants in the high-PTG group will recall significantly fewer trauma-related words in the TBF condition.
- (3) There will be no difference between memory capacities of the two groups. Specifically, the directed forgetting effect of neutral words for the high-PTG group will be similar to that of the low-PTG group – namely, there will be no statistically significant difference in recall of neutral words between the high- and low-PTG groups.

The participants were teenagers who had been living in some of the worst-hit areas of the 8.0-magnitude Sichuan Earthquake in 2008. Our study can be considered timely and necessary because the time lag of 4 years was sufficient for the adolescents to have developed PTG, and because post-traumatic mental health is crucial for adolescents' wellbeing into adulthood.

Methods

Sample size calculation

Previous studies on the relationship between directed forgetting and PTSD reported an effect size of approximately 0.5 (McNally et al., 1998). Based on this effect size, we calculated the minimum sample size using G*power. Accounting for the interactive effects of the two groups and the $2 \times 3 \times 2$ mixed design ($\alpha = 0.05$ and power = 0.80), we obtained a necessary sample size of 42. Consequently, we designated 42 as the minimum sample size for this study.

Participants

Participants were high-school students from Dujiangyan, Sichuan Province, China. Dujiangyan was one of the worst earthquake-stricken areas in the 2008 Sichuan Earthquake. All participants were in the city when the earthquake occurred.

Data collection was conducted in 2012. Questionnaires ($N = 250$) were administered to participants in person, and 219 completed forms were returned (response rate = 87.6%). We calculated the score of the Chinese version of the PTG Inventory (PTGI) for each respondent, and those who scored in the top and bottom 10% were recruited for our study. Twenty-four students who scored 66–85 comprised our high-PTG group, while 22 students with scores of 0–27 comprised the low-PTG group.

The sample was primarily female ($n = 33$; 71.7%). Their ages ranged from 16 to 17 (mean = 16.28 years, $SD = 0.54$). The high- and low-PTG groups did not differ significantly in terms of demographic variables such as age [$t(44) = 0.50$, $p > 0.05$], sex (chi-square = 0.02, $p = 0.89$), paternal education (chi-square = 8.10, $p = 0.09$), maternal education (chi-square = 6.53, $p = 0.16$), or birthplace (chi-square = 3.35, $p = 0.19$). They further did not differ significantly in trauma-related confounding variables, such as diagnosis of PTSD. The average CRIES13 scores for the high- and low-PTG groups were 27.42 and 27.35, respectively (PCL range 0–65, cutoff = 30). [$t(44) = -0.890$, $p = 0.96$].

Measures

PTGI. Tedeschi and Calhoun (1996) developed the PTGI. This instrument comprises 21 items in five dimensions: interpersonal relationships (7 items), new possibilities (5 items), personal power (4 items), spiritual change (2 items), and life enjoyment (3 items). Respondents are instructed to indicate, for each item, the degree to which a change occurred in their lives as a result of the crisis/disaster that they experienced. Responses are made on a 6-point Likert-type scale ranging from 0 (*I did not experience this change because of my crisis*) to 5 (*I experienced this change to a very great degree because of my crisis*). The test-retest reliability after two months ranges from 0.37 to 0.74. The Chinese version of the scale, which was translated by Gao et al. (2010), was used in this study. The internal consistency (Cronbach's alpha) coefficients in this study ranged from 0.66 to 0.85.

The Children's Revised Impact Event Scale (CRIES13). PTSD symptoms were assessed by using the 13-item Children's Revised Impact of Event Scale (Smith, Perrin, Dyregrov, & Yule, 2003). It was developed as a screening instrument for children at risk of developing PTSD after experiencing a traumatic event. Each item is rated on a four-point scale (Not at all, Rarely, Sometimes, Often), scored 0, 1, 3, 5 with no reversed items. The total score ranges from 0 to 65. A score of 30 and above has been confirmed as the most effective cut-off score for screening cases of PTSD.

Experimental Stimuli (Words with Emotional Valences). One hundred 2-character Chinese words, with positive, neutral, or trauma-related negative valences, were chosen from a lexicon of frequently used Chinese words (Liu, 1990). The words in each of these three groups were matched carefully in terms of word frequency, number of syllables, and word length. Five graduate psychology students were asked to evaluate the emotional valence of the words, and finally 48 words (16 words of each valence) were selected. These 48 two-character words were randomly divided into two groups: the TBF group and the TBR group. Each group comprised 8 positive, 8 neutral, and 8 trauma-related negative words. The order of all of the words was counterbalanced. The English translation of the trauma-related, negative Chinese words were loss, abandon, tears, blood, heartbroken, cruelty, ruins, hurt, pass away, death, darkness, hospitalization, ruthless, destroy, illness, and disaster. The neutral words were designate, treat, income, offspring, birthplace, similarity, check, relation, occupation, connection, individuals, image, communication, job, plant, and background. Finally, the positive words were independence, assistance, sympathy, passion, recovery, magnificent, amazing, improvement, smile, splendid, virtue, harmony, optimistic, happiness, honor, and favor.

Experimental design

The experiment was a 2 (PTGI level: high vs. low) $\times$ 2 (instructions: TBF vs. TBR) $\times$ 3 (word valence: positive vs. neutral vs. trauma related) mixed factorial design. The instructions and the emotional valence of the words were within-subject variables and the high/low-PTG condition was the between-subjects variable. The dependent variable was the percentage of remembered words in each experimental condition.

Procedure

The study was approved by the ethics review board of the Peking University. Written informed consent was obtained from all participants prior to their enrollment in the study. All participants voluntarily agreed to participate in the study. They were also informed that they could withdraw from the study at any time and that their individual information would be kept confidential.

The experimenter explained to participants that they were going to take a memory test and that they were expected to try their best to remember the words they saw on the computer screen. The experiment was divided into four stages.

In the first stage, 24 two-character words appeared on the computer screen one by one. Each participant was exposed to the first list of words. We generated 24 random sequences of the positive, neutral, and trauma-related words. All of the words were in boldface, the same font size, and they appeared in the middle of the screen. The participants were required to remember the words without taking notes. Each target stimulus (i.e., word) remained on the screen for 5 seconds, followed by a 3-second masking stimulus (" "). After all 24 words had been shown, the following text was presented on the computer screen: "The first stage is finished. The first part was just an exercise and your performance in this stage has nothing to do with the experiments' results. You should forget the words and start the second part of the experiment." This instructional text remained on the screen for 20 seconds to ensure sufficient time for the participants to forget the words they had just seen.

In the second stage, the participants were told that this stage was the real task and they should remember as many words on the list as possible. The 24 TBR words were shown in this stage.

In the third stage, participants completed a distraction task. Twenty simple mental arithmetic tasks were administered and the participants were asked to write their answers on a piece of paper. The distracter task lasted for one minute to control extraneous variables, such as the recency effect.

In the final stage, a signal text was shown on the screen: "The experiment is finished! Please write down all the words that were shown on the screen. Attention please! You need to recall items from both lists, regardless of the cue." Then the screen was turned off and the participants were required to write down on paper all of the words they could remember.

Results

The effect of instruction, emotional valence, and PTG group on recall rate

First, the words that were correctly recalled from List 1 (TBF) and List 2 (TBR) were counted and descriptive statistics were calculated. Then we conducted a mixed-design factorial ANOVA on recall rate. The means, standard deviations, and 95% CIs of the study's variables for each cell are shown in Table 1.

The ANOVA yielded significant main effects of instructions ($F = 23.82, p < 0.001, \eta_p^2 = 0.35$) and emotional valence ($F = 7.56, p < 0.001, \eta_p^2 = 0.26$). The 2-way interaction between instructions and PTG group was not significant ($F = 0.02, p = 0.902, \eta_p^2 = 0.000$). There was no significant 3-way interaction effect among the three factors ($F = 1.26, p = 0.294, \eta_p^2 = 0.055$).

The main effect of instruction confirmed the significant directed forgetting effect – namely, there were lower recall rates for TBF items than for TBR items ($t = 4.94, p < 0.001, d = 1.04$). This result also indicated that the instructions on forgetting the first list (TBF items) were effective. The significant main effect of emotional valence indicated that there was a significant difference among recall rates of different words ($p < 0.05$; i.e., trauma-related negative words > positive words > neutral words). There was no significant main effect of PTG group, meaning that there were no differences in general memory ability between the high-PTG and low-PTG groups.

There was a significant interaction of emotional valence by PTG Group ($F = 4.70, p = 0.014, \eta_p^2 = 0.18$), which is illustrated in Figure 1. The recall rates of neutral words were consistently lower than those of emotional words, regardless of PTG scores. Conversely, the high- and low-PTG groups showed different recall rates for words with different emotional valence. For positive words, the recall rate of the high-PTG group was significantly higher than that of the low-PTG group ($t = 2.56, p = 0.014$, Cohen's $d = 0.76$). This result supported Hypothesis 1. For trauma-related words, the recall performance of the high-PTG group was significantly lower than that of the low-PTG group ($t = 2.45, p = 0.018$, Cohen's $d = 0.72$). This result supported Hypothesis 2. For neutral words, there was no significant difference in the recall rates between the high- and low-PTG groups ($t = 0.168, p = 0.867$, Cohen's $d = 0.05$). This result supported hypothesis 3.

The 2-way interaction between instructions and PTG group was non-significant ($F = 0.02, p = 0.902, \eta_p^2 = 0.000$). In other words, for all participants, the instructions were effective (TBR words were recalled more than were TBF words), regardless of participants' self-reported PTG levels. A significant interaction was found between instructions and emotional valence ($F = 8.89, p = 0.001, \eta_p^2 = 0.29$). Specifically, the recall rate of the TBR words was significantly higher than that of the TBF words for both the positive ($t = 6.52, p < 0.001$, Cohen's $d = 1.52$) and neutral ($t = 4.38, p < 0.001$, Cohen's $d =$

Table 1. Means, standard deviation and 95% CIs of words' recall rates at different conditions.

Instruction	Emotional valence	PTG group	Mean	Std. Deviation	95% Confidence interval	
					Lower	Upper
TBF	Positive	Low PTG	0.08	0.06	0.06	0.11
		High PTG	0.13	0.10	0.09	0.16
	Neutral	Low PTG	0.10	0.08	0.07	0.13
		High PTG	0.08	0.08	0.05	0.12
	Traumatic	Low PTG	0.20	0.09	0.16	0.23
		High PTG	0.16	0.12	0.11	0.21
TBR	Positive	Low PTG	0.22	0.07	0.19	0.25
		High PTG	0.25	0.10	0.21	0.29
	Neutral	Low PTG	0.16	0.10	0.12	0.21
		High PTG	0.19	0.11	0.11	0.23
	Traumatic	Low PTG	0.24	0.08	0.21	0.27
		High PTG	0.19	0.10	0.15	0.23

Note: TBF – To Be Forgotten; TBR – To Be Remembered; PTG – Post-Traumatic Growth.

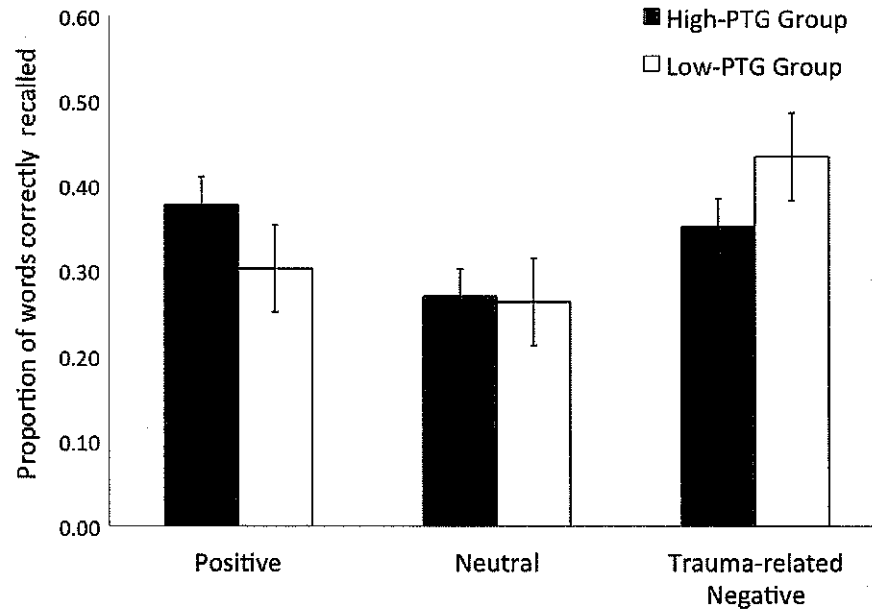


Figure 1. Interaction effect of PTG groups and emotion valence on recall ratio.

0.95) words. However, for trauma-related negative words, there was no significant difference in recall rates between the TBR and TBF words ($t = 1.484$, $p = 0.15$, Cohen's $d = 0.35$).

Discussion

This study explored the directed forgetting effect of words with different valence among individuals with different levels of self-reported PTG. Consistent with our hypothesis, we found that, compared to the low-PTG group, the high-PTG group showed a weaker directed-forgetting effect for TBF positive words. This discovery supports the idea that perceived PTG is related to the retrieval of positive memories. This memory characteristic might be regarded as one of the cognitive representations of PTG. More specifically, this might be a possible criterion for determining whether traumatized individuals have progressed through the meaning-making process (Park, 2010) successfully and gained PTG. As the high and low-PTG groups did not differ significantly in their recall of TBF and TBR neutral words, we can exclude the confounding variable of memory capacity.

We also found that the high- and low-PTG groups differed significantly with respect to their performance on TBF trauma-related negative words. The low-PTG group had a significantly higher mean score on the TBF trauma-related negative words compared to the high-PTG group. These results are consistent with the finding that threat-relevance impairs executive functions, such as response inhibition, for low-PTG individuals (Lindström & Bohlin, 2012). Accordingly, a retrieval-induced forgetting effect was observed for neutral material, but not for trauma-related material (Blix & Brennen, 2012; Dehli & Brennen, 2009).

In contrast, the high-PTG individuals demonstrated higher recall performance in positive TBF words. According to Keith Payne and Corrigan (2007), emotion exerts control over the mind via various mental processes, such as memory retrieval. In our study, emotional memories about positive materials lingered and persisted for high PTG individuals, but not for low PTG individuals. In other words, for people with high PTG, the directed forgetting effect was minimized by the productive meaning making process which generates their PTG (Park, 2010). However, low-PTG individuals demonstrated a normal directed forgetting effect on positive words.

Mood congruence theory (Rusting & Larsen, 1998), described in the introduction, could provide convincing explanations for the findings of a weakened directed-forgetting effect of positive words

TBF among high-PTG individuals. As PTG has been shown to be positively correlated with benefit-finding and positive reappraisal, and both strategies contribute to positive emotion, individuals in the high-PTG group could be more likely to be in a positive mood than were those in the low-PTG group. Therefore, according to the mood-congruency effect, it is easier for people with high-PTG scores to retrieve positive words, thereby reducing the directed forgetting effect of positive material.

Information processing theory (van Rijsbergen & Lalmas, 1996) could also explain the current findings. For participants in the high-PTG group, only the information which was not elaborately processed (e.g., neutral words) could be inhibited and forgotten. Conversely, positive words were processed so elaborately that the cognitive inhibition function was undermined, making the words unlikely to be forgotten.

The results could also be explained by a self-relevance effect that resists forgetting (Neil Macrae & Roseveare, 2002). For the high-PTG group, their lower directed-forgetting effect of TBF positive words could be the result of positive emotional material being more self-relevant for the high PTG participants. A similar explanation is personal characteristics. Namely, those who are more optimistic and positive are more likely to possess both PTG and a bias for positive material (Bozo, Gündoğdu, & Büyükaşık-Çolak, 2009). Thus, one's positive personalities might underlie both PTG and the positive memory bias.

This study was, to our knowledge, the first to identify a cognitive process underlying PTG by investigating the relationship between directed forgetting and PTG. Prior research on the relationship between directed forgetting and trauma typically focused on negative experiences and their relationship with PTSD symptoms and traumatic memories (McNally, Clancy, Barrett, & Parker, 2004). Similar to other person/environment interactive processes, PTG has a unique cognitive representation of memory, which may be the outcome of meaning making. Overall, the impact of PTG on the directed forgetting of trauma-related and positive words provides new understanding of the cognitive mechanisms of PTG.

However, this study has its limitations. First, based on a review by Jayawickreme and Blackie (2014), the results of prospective self-reports do not necessarily reflect PTG. They found low correlations between scores on the PTGI and actual changes from pre- to post-trauma. This lack of correspondence has also manifested in studies of perceived and actual changes in personality (Robins, Nofle, Trzesniewski, & Roberts, 2005). Therefore, the PTG measure used in this study, which reflects only participants' perceptions of their growth, may not be an accurate representation of their actual degree of positive psychological growth. To be more accurate, "PTG" within this study is perhaps better referred to as "retrospective self-reports of perceived PTG."

Second, in our sample no subject exhibited the maximum score for elevated PTG. Certain methods of dichotomization, especially the median split approach, have negative consequences, such as reduced statistical power and imprecise estimation, and should be avoided (DeCoster, Iselin, & Gallucci, 2009). To overcome this limitation, we used the highest and the lowest 10% of a group of participants, rather than a median split, in an effort to minimize the dichotomization problem.

Finally, asking adolescents to recall the earthquake conditions might have caused them potential harm; thus, we opted to avoid assessing trauma exposure. For the above reasons, caution should be exercised in generalizing our findings.

The findings of the present study are relevant to many areas. With a better understanding of the connection between PTG and positive memory retrieval, relevant cognitive games or computer tasks can be designed to increase participants' sensitivity for positive materials. Therapists can also encourage patients to recall positive memories or introduce them to benefit finding and positive reappraisal to regulate emotion and promote PTG. However, we realize that memory is only one aspect of cognition. For future studies, more cognitive processes, including attention bias, thinking, and implicit processing can be included to establish a set of cognitive representations of PTG.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Introduction to Mixed Methods Research

Reference :

Hesse-Biber, S.N. (2010). *Mixed methods research: Merging theory with practice*. New York, NY: Guilford Press.

Mixed methods research designs are moving across the disciplines. Their influence is accelerating considerably, especially over the past decade. Researchers are witnessing an influx of mixed methods articles, books, and handbooks that tackle the thorny questions that challenge and push the boundaries of long-held foundational assumptions concerning how knowledge is built, what we can know, and how knowledge building ought to proceed.¹

The growth of mixed methods research is a result of a convergence of factors. The influx of publications on mixed methods is certainly helping to boost its popularity. Additionally, external pressures to combine methods are coming from governmental and private funding agencies, evaluators, and other stakeholders who increasingly want researchers to utilize mixed methods to explore social policy issues.

The advent of new computer-based technologies is sparking great interest in combining a variety of new mixed methods designs and analytical practices. Computer-assisted qualitative data analysis software programs (CAQDAS), for example, have the ability to incorporate quantitative data into their programs. Qualitative researchers are now able to create quantitative measures from their qualitative data, a statistical measure that was not available for use until recently (Hesse-Biber & Leavy, 2006b; Sandelowski, Volis, & Knafl, 2009).

There is also a growing demand for methods that address the range and scope of novel research questions emanating from new theoreti-

cal contributions. The pioneering works of feminists, postcolonialists, postmodernists, and critical theorists aims to expose subjugated knowledge of oppressed groups that has often been left out of or ignored in traditional research. These new paradigms look at the intersections of race, class, gender, nationality, and other hierarchical forms of social identity and often pinpoint subjugated groups as the focus of social inquiry. Feminist standpoint theory (Harding, 2004; Smith, 1987b), for example, places women's concerns, knowledge, and experiences at the forefront of academic concern and inquiry and is committed to issues of social justice and societal change for women. Critical theory and critical race theory (Wing, 2000) contest traditional knowledge forms and expose the power dynamics of traditional knowledge by revealing the interactions among gender, race, class, nationality, and other social identities. Mixed methods research holds greater potential to address these complex questions by acknowledging the dynamic interconnections that traditional research methods have not adequately addressed (Hesse-Biber & Crofts, 2008; Hesse-Biber & Leavy, 2006b).

Mixed methods research developed with the earliest social research projects; among these are studies of poverty within families conducted in the 1800s in Europe by researchers such as Frédéric Le Play (1855), Charles Booth (1892–1897), and Bohm Rowntree (1901). Their research practices include the incorporation of quantitative and qualitative techniques, including the use of demographic analysis, participant surveys and observations, and social mapping techniques. Charles Booth, for example, developed a social cartography of the city of London by color-coding streets by social class and income of their population. These emergent methods practices filtered into the research landscape in the United States by the beginning of the 20th century (Gilgun, 1999). The Chicago School of Sociology, founded in the 1920s, is noted for its prominence in urban ethnography with an emphasis on a qualitative “case study” approach. The founders of the Chicago School also employed quantitative data (Bulmer, 1984, p. 6). Robert Park, a core member of the Chicago School, applied a mixed methods approach to the study of inner-city urban life by integrating both qualitative and quantitative data into his case studies. He found quantitative data particularly valuable as a marker of social processes. Martin Bulmer (1984) noted:

Park's main emphasis in urban theory was upon processes of invasion and succession and the natural histories of groups and areas

within the city. He wrote in 1926: “In so far as social structure can be defined in terms of position, social changes may be defined in terms of movement: and society exhibits in one of its aspects that can be measured and described in mathematical formulas.” He took an interest in land values, or street-car transfers, or the volume of traffic at intersections, as indexes for underlying social processes. (p. 153)

What Are Mixed Methods?

In general, researchers who use mixed methods employ a research design that uses both quantitative and qualitative data to answer a particular question or set of questions. This combination of methods “involve[s] the collection, analysis, and integration of quantitative and qualitative data in a single or multiphase study” (Hanson, Creswell, Plano Clark, Petska, & Creswell, 2005, p. 224). The term “multimethods” refers to the mixing of methods by combining two or more qualitative methods in a single research study (such as in-depth interviewing and participant observation) or by using two or more quantitative methods (such as a survey and experiment) in a single research study.

Mixed methods is a rich field for the combination of data because with this design “words, pictures, and narrative can be used to add meaning to numbers” (Johnson & Onwuegbuzie, 2004, p. 21). In other words, what we generally consider qualitative data—“words, pictures, and narrative”—can be combined with quantitative, numerical data from a larger-scale study on the same issue, allowing our research results to be generalized for future studies and examinations.

Why Use Mixed Methods?

Greene, Caracelli, and Graham (1989) list five specific reasons that researchers should consider using mixed methods. The first, *triangulation*, seems to be the most commonly cited reason that mixed methods are incorporated into research. Triangulation—or, more specifically, *methods triangulation*, in the context of methods alone—refers to the use of more than one method while studying the same research question in order to “examine the same dimension of a research problem” (Jick, 1979, p. 602). The researcher is looking for a convergence of the data collected by all methods in a study to enhance the credibility of the research findings. Triangulation ultimately fortifies and enriches a

study's conclusions, making them more acceptable to advocates of both qualitative and quantitative methods.

The second reason to consider incorporating a mixed methods design is *complementarity*. Complementarity allows the researcher to gain a fuller understanding of the research problem and/or to clarify a given research result. This is accomplished by utilizing both quantitative and qualitative data and not just the numerical or narrative explanation alone to understand the social story in its entirety. Both complementarity and triangulation are useful "for cross-validation when multiple methods produce comparable data" (Yauch & Steudel, 2003, p. 466). Complementarity has proven useful in several research studies, and a strong example is Yauch and Steudel's (2003) examination of the organizational cultures of two small manufacturers. In their work, Yauch and Steudel utilized both qualitative and quantitative research methods. Not only did the triangulation of the qualitative and quantitative data secure the validity of their study, but the complementarity of the two datasets produced a more thorough comprehension of the organizational cultures in question.

The researchers first used employee interviews to gather a wealth of narrative information and then used their qualitative findings to create a survey to collect numerical data. Yauch and Steudel's hope was to use mixed methods to "identify key cultural factors that aided or hindered a company's ability to successfully implement manufacturing cells [autonomous labor teams]" (2003, p. 467). Combining and crossing these data yielded rich results:

Despite the long delay between beginning the qualitative assessment and administering the survey, the OCI [survey] was an important means of triangulation for two of the cultural factors identified and had the potential to reveal additional cultural dimensions that the qualitative analysis might have missed. (Yauch & Steudel, 2003, p. 476)

This study illustrates the power and possibilities inherent in mixed methods research; the researchers unearthed the convergence of the data from interviews and surveys through triangulation as well as the complementarity of the qualitative and quantitative data, which supplied them with a greater understanding of the organizational cultures of small manufacturers.

Mixed methods assist the researcher's total understanding of the research problem; this understanding represents the third reason

for using mixed methods: *development*. Mixed methods often aid in the development of a research project by creating a synergistic effect, whereby the “results from one method . . . help develop or inform the other method” (Greene et al., 1989, p. 259). For example, statistical data collected from a quantitative method can often shape interview questions for the qualitative portion of one’s study. Jenkins’s (2001) research on rural adolescents and substance abuse illustrates the potential of the development factor in a mixed methods study. Jenkins administered a structured questionnaire to quantitatively measure students’ drug use. Her study also included a follow-up set of focus-group interviews and open-ended questionnaires intended to capture students’ perceptions of “drug resistance difficulties” to a variety of drugs ranging from alcohol to LSD to various types of narcotics (Jenkins, 2001, p. 215). The results from conducting both these studies sequentially contributed to Jenkins’s overall understanding of drug abuse among this population. Her initial use of a structured questionnaire provided her with a statistical understanding of student drug use. A follow-up focus-group study provided her the opportunity to triangulate her data (asking whether the findings from both studies agreed), and, in doing so, she found that the results from the focus group were “consistent with the open-ended questionnaire findings . . . [and] provided further clarification and, in some instances, additional information” (Jenkins, 2001, p. 219). In addition, by implementing a sequential design with the quantitative component first and the qualitative second, she was able to attain a “value added” understanding of the results from both studies. Her focus-group data allowed her to clarify and follow up on definitions and uses of terms, such as “peer pressure,” that were used in survey questions and to ground their meaning from the perspective of her respondents.

A fourth reason cited for using mixed methods is *initiation*; a study’s findings may raise questions or contradictions that will require clarification, thus initiating a new study. The desired effect of the new study would be to add new insights to existing theories on the phenomenon under examination (Greene et al., 1989). In fact, findings from this study might uncover a completely new social research topic and launch a new investigation, leading us to a fifth reason for doing mixed methods research: *expansion*. Expansion is intended to “extend the breadth and range of the inquiry” (Greene et al., 1989, p. 259). Producing detailed findings helps enable future research endeavors and allows researchers to continuously employ different and mixed methods in their pursuit of new or modified research questions.

Greene and her colleagues (1989) provide a useful organizing framework for characterizing the ways researchers have used mixed methods. We can clearly see the positive power and synergy of using these methods to complement one's research findings. Quantitative information delivered in a "hard data" format is amenable to statistical analyses and standardized tests of reliability and validity. Qualitative data add an in-depth understanding of research results and allow the researcher to explore anomalies or subgroups within the data. Working with both methods gives many researchers a cross-check on their research results. Qualitative data illuminate the meaning of statistical results by adding a narrative understanding to quantitative research findings. Qualitative methods can also assist researchers who want to test the validity of their research questionnaires by sequentially utilizing mixed methods. For instance, an initial qualitative study allows the development of research instruments, such as a questionnaire, that can be used in a large-scale quantitative research study. Similarly, quantitative data can assist qualitative researchers by providing them with a broader context within which to place their qualitative data, as well as providing, through survey samples, ways to identify representative cases for their in-depth research. It is in this sense that quantitative data can be useful for establishing generalizability of qualitative results.

All of these reasons provide strong arguments for a researcher to consider a mixed methods approach. The following in-depth example shows the promise of mixed methods research in tackling a complex social problem: obesity in children.

***The Fight against Childhood Obesity:
An Illustration of the Need for and Importance of Mixed Methods***

America is facing a new range of problems in the 21st century. Poverty, war, and health care are among these challenges, but a deeper problem threatens families and children across the country. Childhood obesity has become a nationwide epidemic, and parents and physicians alike are raising concerns. Consider the following article that appeared in *The New York Times*:

Six-year-old Karlind Dunbar barely touched her dinner, but not for time-honored 6-year-old reasons. The pasta was not the wrong shape. She did not have an urgent date with her dolls.

The problem was the letter Karlind discovered, tucked inside her report card, saying that she had a body mass index in the 80th

percentile. The first grader did not know what “index” or “percentile” meant, or that children scoring in the 5th through 85th percentiles are considered normal, while those scoring higher are at risk of being or already overweight.

Yet she became convinced that her teachers were chastising her for overeating.

Since the letter arrived, “my 2-year-old eats more than she does,” said Georgeanna Dunbar, Karlind’s mother, who complained to the school and is trying to help her confused child. “She’s afraid she’s going to get in trouble,” Ms. Dunbar said. (Kantor, 2007, pp. A1, A14)²

Many school districts across the country have adopted the body mass index (BMI) screening test as a weapon for fighting childhood obesity. On the surface, conducting BMI screening tests on students from kindergarten through eighth grade appears to achieve an important health goal by identifying the percentage of children who are overweight, a crucial step in fighting childhood obesity. Yet there does not seem to be a research design in place that can fully address this objective if the goal of these data is to assist in stemming the tide of obesity. In fact, it appears as though little thought was ever given as to how these data might empower parents and their children to be part of the problem’s solution. Gathering descriptive quantitative data is not enough to complete the goals of this study. One needs a broader understanding of the social context within which this information is disseminated among families to ensure that both students and parents are prepared to prevent childhood obesity and to develop the best strategy for fighting the obesity epidemic now.

There are many questions we might ask to gain a clearer understanding of the factors nurturing America’s obesity problem. Exploring the lived experiences of students and their families and the day-to-day experiences of children’s eating behaviors at school would provide beneficial information. What is the school environment like for students with respect to eating? What types of relationships do they have with food at home? To what extent, if any, would parents welcome the school’s input into their children’s issues with weight? These are only a few of the many social-context questions that should be addressed so that schools might utilize the best approach for conveying weight-related “bad news” to both students and their families.

Designing a stronger research strategy would play a significant role in this process. For example, one might use a qualitative focus-

group-study design following the collection of BMI scores. The quantitative data collected could be presented to a representative group of parents; the researchers, perhaps in conjunction with school and health officials, could assess the parents' reactions to this aggregated data for their school and also receive input on how to disseminate, if at all, these results to families and students. A mixed methods study consisting of a quantitative component (the BMI score collection) followed by a qualitative component (focus group) might give researchers a deeper understanding of parents' feelings and attitudes toward childhood obesity. The focus group could also collect parents' suggestions as to how these results could be utilized to combat the epidemic. As one mother quoted in *The New York Times* article commented, "The school provides us with this information with no education about how to use it or what it means" (Kantor, 2007, p. A14). A fictitious causal link exists in many researchers' minds that letters to parents will trigger the logical response of parents taking personal action to stem the tide of weight gain in their children. This strategy has not succeeded, and, in some cases, the opposite reaction seems to have occurred. One report observed the reaction of some parents: "the letters sent home with report cards . . . [were] a shock. Many parents threw them out, outraged to be told how much their children should weigh or unconvinced that children who look just fine by local standards are too large by official ones" (Kantor, 2007, p. A14).

In the end, rather than fighting the effects of obesity, the letter made many families feel helpless and victimized by a flawed system. There appears to be little understanding of the physical and mental effects of bad BMI news on parents and children. The assumption that the problem stems from imprinted eating habits learned at home leads to the conclusion that BMI screenings conducted in school would be an effective deterrent to childhood obesity. Yet research has revealed that the problem runs deeper than family eating habits and screenings. In some schools, the food available in the cafeterias was not nutritious and, in fact, exacerbated the problem. In these specific schools, cafeteria cuisine was the central root of the problem, as schools were "continuing to feed them atrocious quality meals and snacks, with limited if any opportunities for phys-ed in school" (Kantor, 2007, p. A14).

This example illustrates the need for mixed methods research across a range of disciplines from the physical sciences to the social and behavioral sciences. The problems that followed the BMI screening tests and information letters could have been assuaged with a unique

research method that would probe the numerical and statistical data and unite it with qualitative information collected through interviews with parents and students so that an effective means of childhood obesity prevention and reversal might be discovered. Scholars and researchers are still debating the benefits of mixing methods, but there seems to be significant promise for this revolutionary design.

Objectives of This Book

One objective of this book is to reconceptualize the approach to mixed methods research by offering a *comprehensive approach* that stresses the *tight link between theory and research* and that centers the research problem in the design and analysis of mixed methods projects, whether they are derived from a quantitative or a qualitative approach.

A second aim of this book is to center *qualitative approaches* to mixed methods research. Typically, in mixed methods research discourse, quantitative approaches have primacy over qualitative ones. Qualitative approaches stem from a different research logic, one that privileges subjective experience and that is open to a multilayered view of the social world. In this book, we focus on the idea that centering a qualitative approach in mixed methods research can be illuminating, useful, and advantageous, especially as a means to get at subjugated knowledge—knowledge that has not been a part of mainstream research inquiry. A mixed methods approach also allows the researcher to get at “subjective experiences” of those researched while providing the means to test out theories generated from in-depth research samples.

A third objective is to provide researchers with a more detailed understanding of qualitative mixed methods perspectives and practices. In addition, it is my hope that those researchers currently practicing mixed methods from a quantitative approach may dialogue with qualitative approaches by reflecting on the ways in which they might integrate a qualitative perspective into their mixed methods practice.

A final goal for this book is visionary and elusive. It is my wish that, in uncovering and centering qualitative approaches to mixed methods, we can open up a dialogue across current mixed methods research approaches and practices that may serve to fuel synergy and innovation in methods practice with the goal of providing a more complex view and understanding of the social world.

A Comprehensive Perspective on Mixed Methods

I argue that the current practice of mixed methods research is exemplified by a “cart before the horse” approach. Mixed methods designs are driven by research techniques to the detriment of theory-based research. Figure 1.1 presents a “methods-centric” approach to mixed methods research that places methodology (theory) last in the process of choosing a particular mixed methods design. In this mixed methods design (Figure 1.1), methodology (theory) is isolated from the rest of the research model and appears as the last in the design sequence. It is not clear how theory (whether it is implied or explicit) is linked to a specific methods design, but it appears as if the mixed methods design model *is methods-centric* in that the type of mixed method model selected drives the type of theory chosen.

In their review of trends and issues in mixed methods evaluation, Miller and Fredericks (2006) suggested that this misplacement of theory in a mixed methods project is a “problem of logic” that often plagues the choice of mixed methods approaches, especially in evaluation research. They noted:

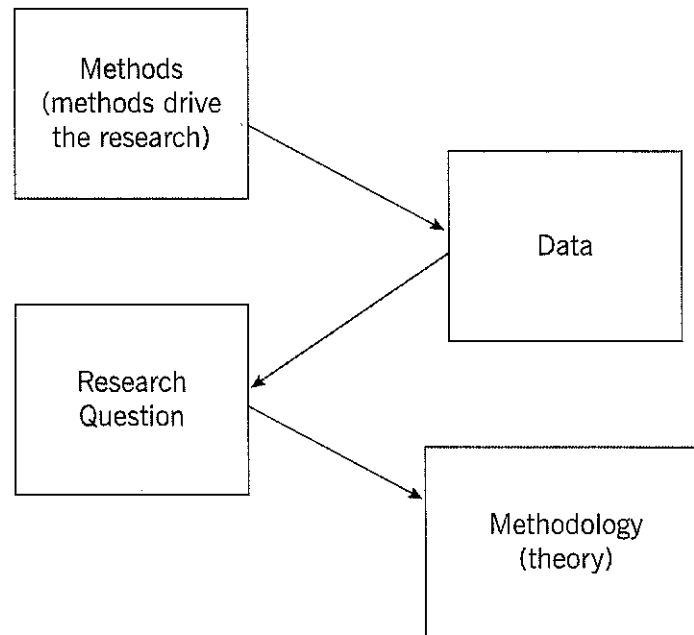


FIGURE 1.1. Methods-centric approach to mixed methods research.

One can, of course, a priori, simply declare that any MM strategy is appropriate for the issue being studied. However, this thinking introduces an unwanted arbitrariness to the whole process, which potentially undermines the very purpose of advocating for the uniqueness of MM. The situation is further exacerbated by the use of vague rationales for the selection of a particular mixed method, suggesting that the use of MM will result in richer data or stronger inferences. (p. 569)

As I have stated, I believe that current practice of mixed methods research takes a “cart before the horse” approach. I propose, instead, a practice of mixed methods that is firmly rooted within a research context with the intention that the method or methods used foster a richer understanding of the research problem under investigation.

A Comprehensive Approach to Mixed Methods

Figure 1.2 provides a diagram of a comprehensive approach to research. The basic premise of the comprehensive approach is that methodology provides the theoretical perspective that links a research problem with a particular method or methods. Methodologies are derived from a researcher’s assumptions about the nature of existence (ontology). These assumptions, in turn, lead to their perspective philosophy or set of philosophies on the nature of knowledge building (epistemology) regarding such foundational questions as: Who can know? What can be known? We can think of methodology as a theoretical bridge that connects the research problem with the research method. Kushner (2002) underscored the importance of methodology in methods practice:

We cannot talk of “method” alone. To talk about the “interview” apart from its purpose is merely to picture two people engaged in verbal exchange. Only when we shift to the level of methodology where we talk about purpose and value does the instrument become sufficiently complex to sustain discussion. Method is like a glove which needs the human hand to give it shape and meaning. (p. 252)

Methodology leads the researcher to ask certain research questions and prioritize what questions and issues are most important to study. Researchers within and across disciplines can hold a range of different methodologies that frame their methods practice. They might

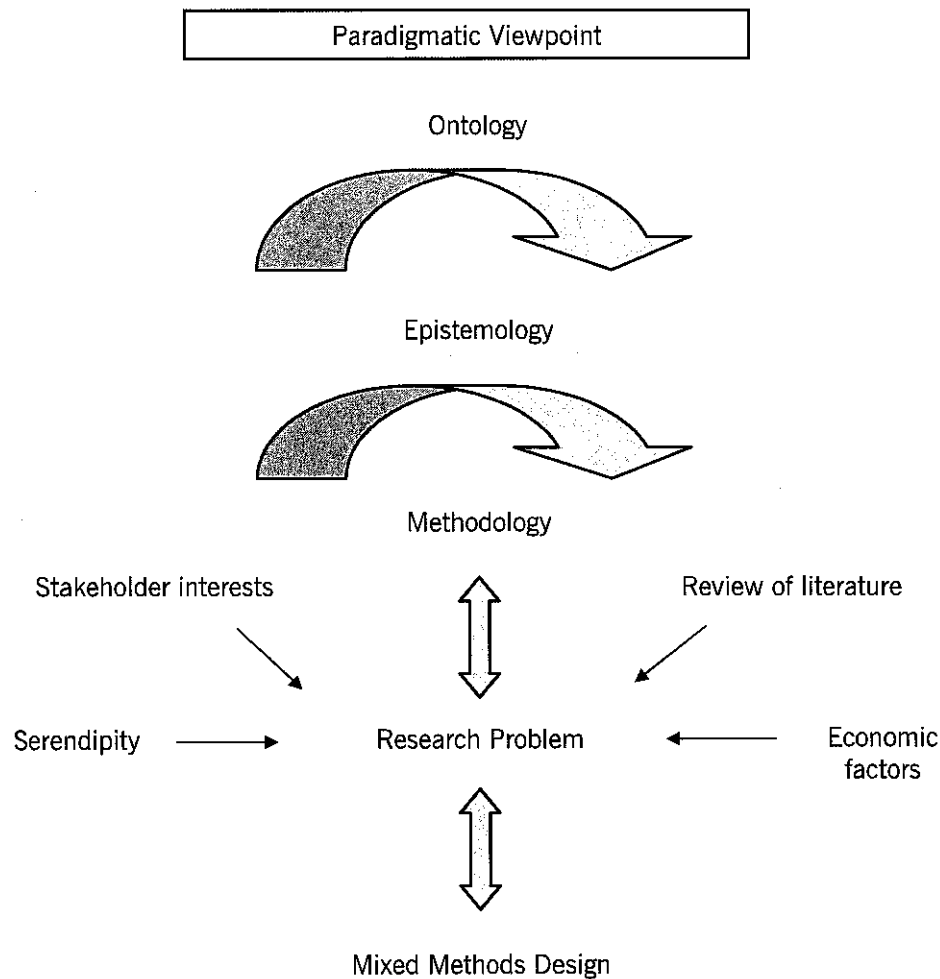


FIGURE 1.2. Comprehensive approach to mixed methods research.

use methodologies that hold up the importance of studying the “lived experiences” of individuals (interpretative methodologies), those that privilege hypothesis testing and causality as the most important goals of social inquiry (positivist and postpositivist methodologies), or methodologies that stress issues of power, control, and social justice (transformative and critical methodologies).

A methodological perspective is not inherently quantitative or qualitative in terms of its use of method. For example, those who practice more positivistic methodology—traditionally seen as quantitative—can use qualitative as well as quantitative methods. In fact, qualitative and quantitative methods are carried out within a range of methodologies (theoretical perspectives). Those espousing feminist methodologies—traditionally viewed as qualitative researchers—can use quantitative methods, including surveys and experiments, in their research. The

comprehensive perspective on mixed methods troubles the dualism between qualitative and quantitative methods when we remember that methods lie in the service of methodologies.

Jennifer Greene (2002) captured the important role that a methodological framework takes on in a research project:

Most . . . methodologies have preferences for particular methods, but methods gain meaning only from the methodologies that shape and guide their use. . . . An interview does not inherently respect the agency of individual human life; it only does so if guided by and implemented within a methodological framework that advances this stance. So, any discussions of mixing methods . . . must be discussions of mixing methodologies, and thus of the complex epistemological and value-based issues that such an idea invokes. (p. 260)

Greene stated that methods are tools and that, in the hands of researchers with certain methodological persuasions, they can be used to promote social justice, maintain the status quo, or promote social transformation. There is a need, then, for researchers to be conscious of the methodological perspective(s) they employ within their research projects. Greene, Benjamin, and Goodyear (2001) referred to this as “thoughtful mixed method planning,” in which the researcher is cognizant of his or her particular methodological standpoint. They noted that each researcher should “figure out one’s stance on the ‘paradigm issues’ in mixed method enquiry” (pp. 29–30). Good mixed methods work requires “consciousness of this organizing framework and adherence to its guidance for enquiry practice” (p. 30).

It is also important to note, however, that although paradigmatic assumptions very often guide the researcher in a variety of ways—including the selection of certain research problems, the choice of methods selected, and how the researcher will analyze and interpret his or her data—research questions can be guided by a range of additional factors. Figure 1.2 depicts these factors as arrows that can influence the research question. Influential factors can include a review of the research literature, specific constraints the researcher is faced with (both economic and lifestyle choices, as well as those particular constraints imposed by funding agencies and/or one’s disciplinary practice), and even serendipity; these factors can preclude or favor the choice of particular research problems.

Sometimes a researcher is conscious about his or her paradigmatic worldview, but it can also remain implicit or even unconscious and taken for granted. Although there may be additional factors (economic

concerns, time constraints, stakeholder interests) to take into account in the selection of a research method, methodology (theoretical perspective) is the link that connects the research question with specific methods that address these questions (see Jackson, 2006). We take up these issues in depth in Chapter 2.

The Need for Qualitative Approaches to Mixed Methods Research

The mixed methods research design that appears to be the favored design model incorporates a qualitative component into a primarily quantitative study, as this model is thought to satisfy the need for generalization and to provide the illustrative power of narrative (Morse, 2003). This is not to discount the fact that there are mixed methods designs in which the qualitative component is primary, but even within these mixed methods studies, the goal of the qualitative component is often to “assist” the quantitative data in developing, for example, better measures for a survey or to assist in teasing out contradictory survey findings (Creswell, Shope, Plano Clark, & Green, 2006).

This popular type of mixed methods model is based on a quantitative *positivistic approach* to mixed methods research, one that privileges the scientific method of knowledge building. This type of science is built on a primarily deductive mode of knowledge building that relies on “theory testing” and that privileges value neutrality and objectivity over subjectively derived knowledge. Positivism holds the central belief that an objective reality exists that is independent of any individual’s subjective experience. Quantitative data and analyses (using surveys, experiments, and statistical analysis of data) are often at the center, with qualitative data used in the service of enhancing a primarily quantitative mixed methods approach. Creswell, Plano Clark, Gutmann, and Hanson (2003) note that one of the most common mixed methods designs is triangulation (QUAN + QUAL). This design is employed when a researcher seeks to validate quantitative statistical findings with qualitative data results. Yet the assumption underlying triangulation is the positivistic view that there is an objective reality in which a given truth can be validated. The most common type of sequential mixed methods design appears to place the qualitative study in a more supportive role, “where qualitative pilot work is likely to precede and be subservient to a larger survey” (Brannen, 2005, p. 15). Bahl and Milne

(2006) note that within marketing research most researchers employ a “positivist orientation,” using qualitative research in a “supportive role” to a more privileged quantitative study (p. 198).

Giddings (2006) noted the extent to which much of the mixed methods research has been conducted under the guise of a positivistic methodology—what she called, “positivism dressed in drag”:

A design is set in place, a protocol followed. In the main, the questions are descriptive, traditional positivist research language is used with a dusting of words from other paradigms, and the designs come up with structured descriptive results. Integration is at a descriptive level. A qualitative aspect of the study is often “fitted in.” The thinking is clearly positivist and pragmatic. The message often received by a naïve researcher, however, is that mixed methods combines and shares “thinking” at the paradigm level. (p. 200)

According to Giddings, the idea that mixed methods research now combines the best of both qualitative and quantitative approaches is like a “new guise” for positivism and is really business as usual (2006, p. 200). In a sense, Giddings argued that mixed methods would serve only to strengthen the positivistic paradigm if in fact qualitative approaches were just “added and stirred” into a general positivistic methodological approach (p. 202). Although mixed methods approaches are not necessarily problematic in and of themselves, the consistent privileging of a quantitative approach in mixed methods research threatens to obscure the power and utility of qualitative approaches and the contributions they can make to mixed methods research.

There are few studies that analyze how mixed methods researchers are in fact using mixed methods designs in a range of empirical articles across the disciplines. What research exists suggests that researchers primarily use mixed methods at the “data collection” stage of a mixed methods project. Bryman (2006), in a content analysis of mixed methods articles, notes that for the most part the quantitative and qualitative portions of the studies were not integrated. In interviews with mixed methods researchers, Bryman (2007a) noted several reasons given by researchers for nonintegration. An important reason was the set of methodological biases researchers had toward one type of methodological approach. Researchers also mentioned the issue of the lag time between the two studies, especially with regard to the qualitative component of a study. Researchers also expressed confusion as to actu-

ally how to mix methods, especially at the data analysis and interpretation stages of a mixed methods project.

One missing piece in the discussion of mixed methods as a research design is the absence of its negative impact. We might critically ask questions such as, When is applying more methods detrimental or unnecessary to answering a given question? What are the economic costs of an additional methods component? What set of criteria helps the researcher decide when one method will do? What are the unintended consequences of applying a mixed methods design for the analysis and interpretation of data from both studies when the researcher is not adequately skilled in the application of both methods? These are but a few caveats regarding the employment of a mixed methods research design; what is more troublesome is that much of the mixed methods literature does not discuss the disadvantages of utilizing a mixed methods design.

This book's focus is on qualitative approaches, both mature and cutting edge, that enhance our understanding of the social world, particularly the lived experiences of individuals and groups. A focus on qualitative approaches to mixed methods research also fits well with the movement toward *interdisciplinary scholarship* that is placing pressure on researchers to draw from many disciplinary methodologies and traditions. Focusing on a range of qualitative approaches can provide a broader theoretical lens through which to look at novel and often thorny interdisciplinary research problems and issues. Qualitative approaches also allow researchers to incorporate issues of *social change*, *power*, and *authority* that push on the boundaries of traditional positivist and postpositivist research concerns and challenge what constitutes "legitimate" research.

Qualitative methodological approaches stress the importance of multiple subjective realities as an important source of knowledge building. Epistemology in this paradigm holds that knowledge gathering and truth are always partial; that researcher values, feelings, and attitudes cannot be removed from the research relationship but instead should be taken into consideration when interpreting the data as part of the knowledge construction process; and some of these approaches also argue that the researcher should establish a reciprocal relationship with research participants to promote an interactional, cooperative co-construction of meaning.

In this book, I demonstrate both the strength of qualitative methodologies and how, when, and why these approaches may best be combined with quantitative methods in mixed method designs. This

perspective is developed and illustrated throughout the book with in-depth examples of how researchers with a qualitative approach employ mixed methods designs.

Researchers originally trained in positivist approaches to research may want to explore the extent to which qualitative methods and methodologies can assist them in answering their research questions. Qualitative approaches to research questions can be valuable to positivistic researchers in a variety of ways, from assisting with the generation of theories and models to the testing of these models. Qualitative approaches, with their emphasis on participant meaning and experience, can also provide a much-needed context for the development of a range of survey instruments from assessment and evaluation tools to question items on surveys.

Qualitative methodologies are a particularly sensitive means of capturing the lived experiences of groups and individuals, especially those often left out of traditional knowledge-building research projects. In other words, qualitative approaches such as postmodernism and feminist critical theory desire to explore the subjective worlds of multiple realities, uncover perspectives of those who have been socially and politically marginalized, and upend positivism's claims to objectivity and traditional knowledge building as the source of truth.

Qualitative methodologies should not be mistaken for qualitative methods. Qualitative methodologies, as noted earlier, use quantitative as well as qualitative methods. The same rule applies for quantitative methodologies. After all, the method is but the tool; the methodology determines the way in which the tool will be utilized. This makes the issue of which design to use confusing and problematic for researchers working from a qualitative or quantitative methodological perspective. Early on, Lincoln and Guba (1985) noted that "naturalistic inquiry" was not necessarily antipositivistic and that, although the use of qualitative data allow the experiences of respondents to be voiced within the research project, there may be many ways in which quantitative data can be incorporated into this type of research approach (pp. 198–199).

This book highlights the ways in which a qualitative approach informs how mixed methods research is conducted. Not all qualitative approaches are the same, and I use this term as an umbrella category that encompasses several different approaches that have slightly different emphases. This book selects three specific qualitative approaches—an interpretative approach, a feminist approach, and a postmodern approach—to provide a more specific application of a qualitative approach to mixed methods research designs.

For each approach (the interpretative, feminist, and postmodernist approaches), we are interested in how researchers with these specific qualitative points of view integrate mixed methods into their work. How conscious or unconscious is the process of choosing to utilize mixed methods? More specifically, what motivations or purposes can be discerned as reasons for mixing methods? In what way(s), if any, are the qualitative and quantitative components of a project related, and at what stage in the research process? What are the issues and positive outcomes of using a mixed methods design?

Each of these approaches to research makes certain ontological, epistemological, and methodological assumptions regarding the nature of the social world. These different theoretical approaches are often subsumed under the term “qualitative methodologies.” However, these methodologies are just as diverse as the researchers who practice them, so let’s take a moment to examine these different perspectives in greater depth.

If a researcher employs an *interpretative approach* to research, the researcher’s epistemology assumes multiple subjective realities that consist of stories or meanings produced or constructed by individuals within their “natural” settings. Crabtree and Miller (1999) noted that interpretivists in particular

trace their roots back to phenomenology (Schutz, 1967) and hermeneutics (Heidegger, 1927, 1962). This tradition also recognizes the importance of the subjective human creation of meaning but doesn’t reject outright some notion of objectivity. Pluralism, not relativism, is stressed, with focus on the circular dynamic tension of subject and object. (p. 10)

Feminist perspectives are specifically interested in understanding knowledge “for women.” These perspectives, such as standpoint theory, are aware of the “male-centered” biases of traditional positivistic concerns, especially as they pertain to the issues of objectivity within the research process whereby individuals must place their own values and concerns outside the research endeavor. For feminist researchers, there is no knowledge that is without bias. There is no view from “nowhere”; knowledge is imbued with the power and authority of those who have it. They point to the long-standing androcentric (male) bias of early knowledge building, especially as practiced by early positivists, which often ignored women’s concerns in their research. Positivist researchers have also historically overlooked issues of difference in terms of race, class, ethnicity, and sexual preference in their research problems

and analyses, issues of difference that often centrally inform the work of feminist researchers. A *feminist perspective* moves the issues of those whose lives have been marginalized, overlooked, or misrepresented by traditional investigations to the “front and center” of the research agenda (see Hesse-Biber, 2007). Feminist research stresses the importance of intersectionality—standpoints or worldviews created by the overlapping of a combination of locations within the social structure (i.e., race, class, gender, sexuality, geography, etc.).

Postmodern theorists stress a relativistic approach in their treatment of the social construction of reality. Postmodernism—as well as its related schools of thought, poststructuralism and critical theory—emerged in the late 20th century with the goal of challenging the status quo of modern enlightenment thought. One defining feature of postmodernist paradigms is that they assume that images, symbols, texts, and other representations have the power to create and sustain a given social reality. We use “postmodernism” as an umbrella term for these theories; however, that does not mean that they are the same thing, and at times these terms may not be internally consistent with one another.

Postmodernism challenges positivism’s emphasis on objective truth and instead posits how dominant discourse/language serves to oppress and maintain existing power relations within a society. Postmodernism focuses on deconstructing dominant images, symbols, and texts in order to disrupt their meanings and question their veracity, often by pointing out their class, race, and gender biases. Postmodernism favors a multilayered understanding of social reality that some critics of this perspective say borders on a relativistic view of the social world that obviates all of the scientific methods’ claims to truth.

Qualitative Mixed Methods Approaches: Some Examples

In this section, I provide two examples of researchers who employ a qualitative approach to mixed methods and highlight the ways in which their specific researcher standpoints serve to guide their decision making at various stages throughout the research process.

A Feminist Approach

A feminist approach to knowledge building seeks to ask a set of research questions that often upend traditional forms of knowledge building by

privileging the lived experiences of women at the center of research inquiry (feminist standpoint theory). Their theoretical perspective influences the type of research questions and the specific methods chosen, including the application of these methods in the data collection, analysis, and interpretation stages of the research process. A feminist methodology is firmly rooted in a specific theoretical standpoint on the nature of existence (ontology) and what can be known about it (epistemology). A feminist perspective does influence one's methods practice. For example, feminist researchers are particularly interested in issues of power, authority, and control while conducting research, and therefore they specifically explore such questions as: What is studied and why? From whose perspective is it studied? Who is studied? Who is left out and needs to be included in this study? Looking at difference is an integral part of their research agenda. Realizing that not all women are the same, there is a particular interest in how race, class, sexual orientation, and other differences intersect to impact specific women's lives.

Feminist researchers utilize a range of both quantitative and qualitative tools to answer research questions and are not wedded to one specific method or set of methods. They use whatever methods will best answer the research problem. The practice of research methods is mindful of the ways in which power and authority influence the research process.

Applying Mixed Methods: Behind the Scenes with David A. Karp

David A. Karp is a qualitative researcher who has done cutting-edge research on mental illness. He brings a symbolic interaction with the social world and a theoretical perspective that focuses on how people experience, define, and make meaning out of their daily worlds. He is particularly interested in the experiences of those individuals who are suffering from depression and other mental illnesses. I conducted a set of intensive interviews with him for a behind-the-scenes glimpse into how researchers talk about conducting their own research and the struggles they face in doing so. He highlights the importance of placing methodology first in our understanding of the research process. He demonstrates how it is the researcher's theoretical perspective that leads her or him to ask certain questions, supporting the idea that the methodology of a researcher must be considered prior to deciding which methods to employ in order to acquire their answers.

In his research on depression, David Karp wants to understand depression on a micro rather than a macro level. His questions do

not aim at the larger picture of depression—the numbers of people affected by this illness, the economic impact of the illness, and other grand-scale social problems. What matters to him instead is to understand this illness from the perspective of the individuals struggling with it on a daily, even minute-by-minute, basis—how it feels, what it means, how a person copes with it, how it shapes their interactions with others, and so on. There is a considerable challenge in this emphasis, because, according to Karp, a symbolic interaction perspective on depression is almost completely absent from the research literature on the subject:

what struck me looking at the statistical data was, here were people writing about affective disorders, writing about a feeling disorder, and in nowhere in all of this stuff, was I hearing the feelings of the people who had the disorder. It struck me as just strange, a strange contradiction, that people were writing about feelings without hearing the feelings of the people they were trying to write about.

It is the researcher's methodological perspective that leads him or her to select a given research design. Karp's methodological perspective leads him to inquire about the "lived experiences" of those suffering from depression. He selects in-depth interviews as his primary method because they allow him to pursue research questions that focus on understanding depression from the perspective of those afflicted. For instance, Karp observed, "most of my work in the context of the symbolic interaction point of view about things is that it's an effort to see and to bring to the page the complexity of a messy phenomenon." He feels that for this reason the in-depth qualitative interview "allows me to meet my goal, which is to bring to the reader a deeper understanding of an extremely complex matter, and I think to myself . . . what really would additional numbers bring to the books that are already written?" Although he considered gathering quantitative data, he mainly sees this type of data as "background" for his qualitative results.

The Perils of Mixed Methods

Another issue that is important to reflect on before embarking on a mixed methods study revolves around a researcher's familiarity with both qualitative and quantitative research. Researchers must ask them-

selves whether they have the training and resources necessary to carry out a mixed methods study.

For qualitative researchers, including quantitative data may be time-consuming and difficult to do, especially if one lacks training in the gathering and analysis of such data. Are the benefits worth the investment? David Karp talks about his hesitancy to take on another research method in his own work.

SHARLENE HESSE-BIBER: *When, if at all, might a qualitative researcher with a qualitative methodology think about using mixed methods?*

DAVID KARP: *You know, in some ways it's a very uncomfortable question you're asking because . . . what it is you tell students and what you do yourself [may be different]. Because I walk into a methods class, and . . . it doesn't take more than about two hours into the semester to start talking about triangulation and multiple methods, and every method has strengths and every method has weaknesses. . . . But in the end, I'm always saying to the students that if you have the time and the energy and the money, and you want to get the best results in a piece of work, then you ought to have methods that complement each other . . . and that's the best way that research ought to proceed and, if you can do it, that's the way you ought to do it.*

And then I go off in my own life and I don't do much in the way of mixing methods and so, in some ways, the question makes me sort of uncomfortable. And . . . I think there are a couple of reasons I could mention [as to why I don't]. One is that I think . . . you develop [ways of working] with which you feel comfortable, and it's hard to break from that. . . . If you develop an expertise . . . with the way you're doing things where you feel comfortable, where you've pulled it off before . . . it's hard, it takes a certain courage to stray from . . . what you do well, what's gotten you applause, and to start in some sense fooling around with [new] types of data. . . . It takes a little bit of a leap of courage . . . and maybe . . . a second dimension of this [is that] you haven't challenged yourself to integrate that kind of data into the writing that you do. It's partly a writing issue, I mean you get used to a certain kind of writing.

Jumping on the mixed methods bandwagon without really thinking through the implications of doing so may yield research of dubious quality or research that does not add theoretical value and understanding to a research project. A quantitative researcher who lacks a basic understanding of qualitative methods but decides to use a qualitative

method in his or her project runs the risk of “adding and stirring” his or her qualitative findings into a quantitative project. For example, in order to satisfy a funding agency that prefers a mixed method approach, a quantitative researcher might add a qualitative component to a study by including a few open-ended questions at the end of a (quantitative) survey. Karp described this approach, when used poorly or without theoretical purpose, as “sprinkling.” Karp expanded on this point:

And you know, if you read work where a method is just a throw in, it's just like going to the ice cream store and throwing a few M&Ms onto the top of the ice cream to make it look pretty, and it might taste a little bit better. When I see work like that, where the qualitative stuff is just thrown in for purposes of meeting an agenda, that doesn't really forward your understanding of the phenomenon or forward your theoretical thinking, that bothers me. I think all you're doing is being pragmatic and sort of following someone else's rules and falling in.

I think we should use these methods when they can really forward our understanding, I mean truly forward our understanding of things theoretically, and any other reason strikes me as being problematic and in fact weakening the research that people do.

The Practice of Mixed Methods: Behind the Scenes with Stephen Borgatti

Stephen Borgatti is a professor of Management. He is both an anthropologist and a mathematician and is particularly interested in social network analysis. He conducts qualitative and quantitative research projects, as well as mixed methods projects. I talked with him on the importance of the link between one's research problem and one's method and some of the issues researchers may face when the fit between the two does not work. Borgatti is especially skeptical of forcing premade research designs into your research project. He believes that mixing qualitative and quantitative methods can be very productive, and he does this regularly in his own work:

If I do a network analysis, I typically am going to do some kind of ethnography first to find out what even are the right questions or, if it's theoretically driven, I know what questions I want to ask, I still have to know what language to use so they will understand the questions that I'm asking. So I do a little ethnography, to try to understand what's what, construct a sur-

vey, then have people fill it out, and then, in the analysis, go back to people and say, "I'm finding this. How does this make sense to you, how do you interpret this picture?"

However, Borgatti believes that the growing movement among funding agencies to require the addition of a qualitative component to their quantitative studies—a form of mixed methods design—is misguided. He referred to this approach of force-fitting research design into a predetermined mold as a form of “scientism” and “magical thinking” in which “the form of [the research] makes it scientific.” Borgatti noted that this problem can also work in reverse, such that quantitative methods are force-fit into a primarily qualitative design simply to increase the apparent legitimacy of the research:

I once saw a presentation by a postmodernist; he had done a factor analysis. And he put up these numbers and it was really interesting because it was sort of like a work of art, and the numbers were interpreted almost like a Rorschach, it [showed] little understanding about what factor analysis would involve. It was more like, I don't know, it was more like totems of some kind that he pulled out. . . . I think . . . he was doing it to add legitimacy to what he was doing. . . . He already had certain beliefs, and so he used the numbers to try to illustrate them, but the numbers weren't telling the conclusions. He wasn't drawing conclusions from the numbers. It was the other way around.

The Promise of Mixed Methods Research

An awareness of the importance of not “placing the cart before the horse” in mixed methods practice by centering the research problem holds the promise of enhancing existing theories and the discovery of new theoretical avenues. It is important that the research we do and the resulting data we collect relate back to our theoretical perspectives. Mixing methods can be an exciting process that might open our eyes to new realities and levels of understanding, but such a research design must be utilized only with the certainty that it will aid in “advancing our theoretical understanding” and not detract from our existing methodologies.

My own mixed methods journey began many years ago when I first thought about writing a mixed methods book. In keeping with the

importance of knowing your researcher standpoint as we go forward on this journey, the following are a few reflections on my book-writing journey.

My best recollection is that it all began as a nagging pain in the back of my mind each time I read articles and overall discussions about mixed methods by those whose reputations have been made in promoting these ideas. I am not the creator of this new wave of mixed methods.

I am a feminist qualitative researcher who has a particular perspective on social reality. As a feminist, I am interested in asking a set of research questions that often trouble the waters of traditional knowledge building by including issues of difference in the research process.

I am interested in issues of power, authority, and control while conducting research as well as asking such questions as: What is studied? From whose perspective? Who is being studied? Who is left out and needs to be included in this study? I guess you might say that I am a methods interloper—an outsider and an insider to mixed methods research.

As a sociologist who has had traditional training in quantitative methods and the positivist paradigm, I am an insider in that I practice and teach both methods and have in fact conducted several mixed methods projects. As a feminist, I am often the outsider who asks new questions, yet I will utilize a range of tools—quantitative and qualitative—as needed to answer my questions. I am not wedded to one specific method or set of methods. I use whatever methods will facilitate getting answers to my research problem(s).

As a researcher, my agenda is one of promoting a comprehensive approach and understanding of the use of methods techniques by placing the practice of methods more firmly within a research context. If we are to realize the potential synergy of a mixed methods approach, it is important to understand the interconnections and philosophical groundings that connect our methods to research problems. I am cognizant of the importance of living within the contradictions and tensions of the research process. I enter into dialogue with this process. To dialogue means confronting our assumptions, suspending judgment, and embracing difference. To dialogue also means to hone our listening skills, with a stance toward understanding. I decided to write this book with the goal of providing researchers with a user-friendly guide to the practice of a qualitative approach to mixed methods research.

SHARLENE HESSE-BIBER

GLOSSARY

- complementarity:** one of the reasons for using mixed methods; accomplished by utilizing both quantitative and qualitative data to understand the social story, allowing the researcher to gain a fuller understanding of the research problem and/or clarify a given research result.
- critical/postmodernist theories:** qualitative approaches that examine how social life is produced and the privileges given to those in power, with a goal to emancipate and to expose social injustice.
- development:** aided by mixed methods when the “results from one method . . . help develop or inform the other method” (Greene et al., 1989, p. 259).
- expansion:** a reason for doing mixed methods research; used to “extend the breadth and range of the inquiry” (Greene et al., 1989, p. 259).
- feminist approach:** is specifically interested in understanding knowledge “for women”; moves the issues of those whose lives have been marginalized, overlooked, or misrepresented by traditional investigations to the front and center of the research agenda.
- initiation:** use of mixed methods leads to findings that raise questions or contradictions that will require clarification, thus initiating a new study.
- interpretative approach:** researcher’s epistemology assumes multiple subjective realities that consist of stories or meanings produced or constructed by individuals within their “natural” settings.
- intersectionality:** refers to standpoints or worldviews created by the overlapping of a combination of locations within the social structure (i.e., race, class, gender, sexuality, geography, etc.).
- methods triangulation:** a reason for using mixed methods; the use of more than one method while studying the same research question. The researcher is looking for a convergence of the data collected by all employed methods in a study to enhance the credibility of the research findings.
- mixed methods:** a research design that uses both quantitative and qualitative data to answer a particular question or set of questions.
- positivism:** the central belief that there exists an objective reality and that “facts” are independent of any individual’s subjective experience and values.

Prior to beginning work on this interactive assignment, it is recommended that you review the recommended resources for this week as they will assist you in the creation of an effective presentation of your Research Design.

This interactive assignment will provide you with an opportunity to create a dynamic presentation of some of the materials you are creating for your Research Proposal. This type of presentation would be used in the professional world to request Institutional Review Board (IRB) approval, and potentially elicit funding, for your research.

In your presentation, summarize the main points and ideas for your Research Design. Over the course of the week, you will have the opportunity to share feedback and suggestions with your classmates and instructor, which may assist you in improving your research proposal before submitting the Research Proposal.

For this interactive assignment, create a presentation file using PowerPoint and then create a three- to five-minute screencast video of your presentation with pertinent audio that includes important points about the content of each slide. In order to make sure your video remains within the 3-5 minute time requirement, create a script for your screencast video. You must attach your script to your initial post. It is recommended you rehearse your presentation using your script to ensure that you are within the time limit and that all pertinent information is presented in a manner that is easy to understand. You may use any screencasting software of your choice (e.g., Screencast-O-Matic, Jing, etc.). A quick-start guide is available for [Screencast-O-Matic](#) (Links to an external site.) for your convenience.

The content of the presentation must include the following:

- A brief introduction
- Devise a specific research question related to the topic you chose in Week One.
- Explain the importance of the topic and research question.
- A brief literature review
- Evaluate published research studies on your topic found during your work on the Weeks One, Two, and Four assignments and identify two relevant published studies.
- A description of potential methods
- Based on what you have learned about research design options and requirements in this course, create an appropriate research approach and design to investigate your research question.
- Provide a rationale for your design choices.
- A discussion on ethical issues
- Apply ethical standards to the proposed research and identify potential ethical issues that would apply. Explain how you plan to address these issues.
- A conclusion
- Summarize the main points of the presentation and reiterate why the proposed research is important and why it should be carried out.

In your initial discussion post, introduce your presentation and provide a link to the screencast URL.

Be sure to attach your PowerPoint presentation and script documents to your initial post. Please do not include the question prompt in your initial post.

Note to Students: This assignment requires that you produce a visual presentation, supply a spoken audio narrative, and to listen the audio narrative of others. Note you are also asked to provide a transcript of your presentation. If you have a documented disability accommodation that might interfere with your ability to complete this assignment you may contact your instructor to develop a comparable alternative assignment. If you have other issues that you feel may be a barrier to your ability to complete this course or this assignment please contact the Office of Access and Wellness at: access@ashford.edu.