

# Chapter 13

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## Longitudinal Studies

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Longitudinal studies are typically observational or correlational designs that follow individuals over time in order to test hypotheses. There are several types of longitudinal designs, including prospective panel, retrospective panel, and repeated cross-sectional designs. In a **prospective panel design**, data are collected on the same individuals at two or more time points. In a **retrospective panel design**, the data from two or more time points in the past are reconstructed from archival information. In a **repeated cross-sectional design**, data are collected on the same set of variables at multiple time points, from individuals that are comparable, but not necessarily the same. **Longitudinal designs** are used to assess change over time and to evaluate causal relationships among variables.

One of the strengths of a well-crafted longitudinal study is the disentanglement

of age, period, and cohort effects. **Age effects** refer to the impact of chronological age on the dependent variable. **Period effects** refer to the impact of a specific period of history on the dependent variable. **Cohorts** are groups of individuals who experience the same significant life events in the same period of time. Typically, cohorts are defined by when they were born (birth cohorts) and a cohort effect refers to cohort group differences on the dependent variable. Cohort effects (or at least birth cohort effects) are often conceptualized as an interaction between age and period.

An example will help illustrate these possible effects. There is growing interest in generational differences in leadership behavior. For example, older leaders tend to approach the role of leader in a more traditional and consensual manner than younger leaders, while younger leaders tend to be more task-focused and energetic (Kabacoff & Stoffey, 2001). Are these differences due to generational

differences representing the impact of specific historical experiences on values and expectations or due to the impact of age and consequent maturational processes? If we use a cross-sectional study comparing baby boomers (born between 1946 and 1964) and millennials (born between 1980 and 1995) at one time point (say 2009), we can determine if they differ in their behavior, but we cannot attribute this to either experience or maturation. We also do not know if the baby boomers resembled the millennials when they were younger or if the millennials will come to resemble the baby boomers as they age.

If we follow the millennials over time in a *single cohort* study, we can determine whether their behavior changes or not. However, since there is no comparison group, once again, we cannot determine if the changes represent age/maturation effects or historical effects (e.g., the impact of a current financial crisis on leadership behavior).

The most effective method for disentangling age and generational effects would be a longitudinal panel design with *multiple*

*cohorts*. An idealized design is given in [Table 13.1]. Here we can track change in individuals over time, compare individuals in different cohorts at the same age, and study individuals from different cohorts at the same historical point in time. Of course such studies are very expensive in terms of financial cost, and the time and effort expended to track individuals over long periods of time.

Unlike other designs, longitudinal designs allow the direct assessment of intra-individual change as well as group change. Although typically used in observational settings, these designs can also be used in both experimental studies with randomization to conditions, and quasi-experimental studies with self-selected or preexisting groups.

When longitudinal designs are used to assess causality, three conditions should be present. First, the presumed cause and the presumed effect must covary. Second, the presumed cause must precede the presumed effect in time. Third, the relationship must not be spurious (i.e., not due to any other variables). The

**Table 13.1** Longitudinal Panel Design Comparing Birth Cohorts on Leadership Approach

|                        | <i>Year of Measurement</i> |      |      |      |      |      |
|------------------------|----------------------------|------|------|------|------|------|
|                        | 1965                       | 1975 | 1985 | 1995 | 2005 | 2015 |
| <i>Cohort</i>          |                            |      |      |      |      |      |
| Baby boomers born 1945 | 20                         | 30   | 40   | 50   | 60   | 70   |
| GenXers born 1965      | X                          | X    | 20   | 30   | 40   | 50   |
| Millennials born 1985  | X                          | X    | X    | X    | 20   | 30   |

X indicates no measurement possible. Numbers are ages of participants in the given measurement year.

third condition implies that the covariance between the presumed cause and effect remains nonzero after partialling out competing causes (variables).

As stated, the advantages of longitudinal designs include an ability to directly assess individual change, disentangle maturational and historical processes, and directly address issues of causality. However, there are a number of disadvantages compared with cross-sectional designs.

The time and expense of tracking and accessing participants over time cannot be underestimated. In many academic environments, there is pressure to publish at shorter and more regular intervals than long-term studies typically allow. Researchers may retire or develop new interests during the time required for a long-term study.

Longitudinal studies are particularly susceptible to **differential attrition**. If the participants who drop out of a study differ substantially from those who remain, the assessment of change (at least in the aggregate) is placed in jeopardy. It is therefore essential that participants be assessed initially on a wide range of relevant measures and that later dropouts are compared with retained participants to uncover potential confounding differences.

Standardization of testing conditions and measurement instruments may also be problematic in longitudinal designs. As researchers leave and are replaced by new researchers, procedures may vary as historical knowledge is lost. Additionally, the measures that are seen as important for a field of study may change over time. For example, theoretical models

of leadership behavior have changed substantially in the past 20 years. The variables measured as important in 1989 are not necessarily the same variables deemed important today. Finally, typical assessment methods may change substantially. Twenty years ago it was seen as highly inappropriate for subordinates to evaluate their bosses. Today, an assessment of leadership will usually include a 360-degree evaluation, with direct reports, peers, and bosses rating the leadership behavior of a manager or executive. Such differences make it hard to maintain standardized assessment procedures over long periods of time.

Finally, practice effects and experimental exposure can have a confounding effect on longitudinal designs. If participants know that answering yes to a particular question will lead to a long and intrusive interview, they may not respond accurately. Additionally, participants in longitudinal studies may develop relationships with researchers through exposure over many years. Such relationships may lead them to want to answer questions in ways that will please the experimenter and make themselves look good. Thus, **impression management** may become a more significant factor in longitudinal studies. The major caution factors associated with longitudinal studies are summarized in Box 13.1.

We will evaluate two longitudinal studies, the first together and the second by you alone. Each introduces a longitudinal approach, but they differ in both goals and method of analysis.

**Box 13.1** Caution Factors With Longitudinal Studies

- Change in the dependent variable(s) is not due to practice effects.
- Change in the dependent variable(s) is not due to repeated exposure to the experimenter.
- Change in the dependent variable(s) is not due to changes in the measuring instruments.
- Changes in the dependent variable are not due to selective loss of participants.
- Nonequivalent control groups are carefully matched with the experimental group.
- Dependent measures are reliable and valid.
- Testing conditions are uniform.
- Statistical methods take the correlated nature of the error terms into account.
- Studies that attempt to disentangle age/maturation and period/history include appropriate comparison groups.
- Studies that attempt to ascribe causality must demonstrate that the cause precedes the effect, covaries with the effect, and is not spurious.

### **STUDY EXAMPLE 13.1: "THE RELATIONSHIP BETWEEN BODY IMAGE AND DEPRESSED MOOD IN ADOLESCENCE: A 5-YEAR LONGITUDINAL PANEL STUDY"**

The first study examines gender differences and longitudinal changes in depressive symptoms and body image in a cohort of boys and girls at ages 13, 15, and 18. Panel data were collected from students in Norway.

#### **The Study**



Holsen, I., Kraft, P., & Røysamb, M. (2001). The relationship between body image and depressed mood in adolescence: A 5-year longitudinal panel study. *Journal of Health Psychology, 6*(6), 613–627. Copyright © 2001 by Sage.

A number [of] studies have shown that the prevalence of depressive symptoms tends to increase from childhood to adulthood... and that up to 20% of the respondents in adolescent populations have moderate to high levels of depressive symptoms like depressed mood.

When persistent, depressed mood in adolescence may cause a distortion of normal developmental processes such as the formation of a healthy self-concept... Another possible consequence is the adoption of behaviors and interpersonal

relationships [that] may be detrimental to health and psychosocial well-being . . . and the adoption of serious forms of drug use. . . . As a logical consequence, depressed mood in adolescence has been identified as an indicator for general suboptimal psychosocial functioning in later life. . . . Accordingly, much research interest has been devoted during the last decades to reveal the psychosocial processes that take place during adolescence. The aim of the present study was to contribute to this aggregation of knowledge. Specifically, our aim was to shed light on the role of body image for the development of depressed mood in adolescence.

For the present study, we adopted a conception of body image . . . that body image was conceived of as an aggregate of the combined impact of the actual body structure and function, early and continued body-related experiences, life-long social response to body appearance, and sociocultural values and ideals related to the body. Specifically, body image was operationalized as the individual, subjective sense of satisfaction or dissatisfaction with one's body and physical appearance . . .

Harter . . . has suggested that cultural messages about the importance of appearance are experienced at an early age. One possible mechanism is that those who are attractive by the societal standards get more positive responses than do those who are judged to be less attractive. This situation may provoke psychological reactions that are incorporated into a child's sense of worth. . . .

Generally, adolescent girls tend to value physical appearance higher and consider it to represent a more important personal attribute than do boys. . . . Further (and probably as a consequence), girls tend to be less satisfied with their body image and physical appearance. . . . A number of theoretical explanations have been offered to account for these gender differences. One of the most promising seems to be the objectification theory . . . which provides an explanation for the observed gender differences in body image as well as the relationship between body image and depressive symptoms that has been reported in the research literature. The objectification theory emphasizes how the Western culture socializes females, more than males, to internalize an objectifying observer's perspective of their own body. As a consequence, girls tend to measure their self-worth by evaluating their physical appearance against our culture's sexually objectifying and unrealistic standards of beauty.

One may expect that the process of self-objectification and the stimulus for self-referent thoughts about body image and physical appearance that interpersonal encounters and the mass media represent, may cause young people to experience a discrepancy between the real and the ideal self. . . . There is reason to expect that girls will experience a larger discrepancy between the ideal and real self than boys. This is due to the fact that girls, as they mature, tend to gain

weight in fat and abandon increasingly more the thin ideal body shape [that] is dominant in modern Western societies. . . . In contrast, boys tend to gain more in muscle mass and hence come closer to the ideal body shape of men as they mature. . . . First, we expected to observe a gender difference in body image among adolescents. Second, we expected that with increased age girls would become less satisfied with their body image, while the opposite age-body image relationship was expected in boys.

. . . Adolescents who are dissatisfied with their body or physical appearance tend to report more depressive symptoms. . . . The body image-depressed mood relationship seems to exist in both girls and boys . . . but since girls tend to have a more negative body image, they also (on average) report higher levels of depressive symptoms than do boys. . . . Consequently, we expected to observe a negative association between body image and depressed mood in both sexes. However, given that girls consider physical appearance as a more important personal attribute than do boys . . . we expected both that girls' body image would be below that of boys . . . but also that there would be a stronger relationship between body image and depressed mood in girls as compared to boys.

. . . It seems to represent a serious limitation to existing knowledge that only very few studies have addressed the question of causation empirically . . . conclusions about causality would seem more sound if the findings were replicated in longitudinal panel studies. Such a research design was adopted in the present study, and our expectation was that body image at one point in time would predict depressed mood at a later measurement occasion.

In brief, the present study reports data from a cohort of Norwegian adolescents. The cohort was followed longitudinally, and data collections were performed at ages 13, 15, and 18. Six specific hypotheses were tested against the empirical data: (a) girls were expected to be less satisfied with their body and physical appearance than boys; (b) with increased age, girls would become less satisfied with their body image, while the opposite age-body image relationship was expected in boys; (c) we expected to observe a negative relationship between body image and depressed mood; (d) the negative relationship between body image and depressed mood was expected to be stronger in girls than boys; (e) body image at one point in time was expected to predict depressed mood at a later measurement occasion, and; (f) depressed mood at one point in time was expected to predict body image at a later measurement occasion.

### **1. What was the rationale for the study?**

Research has shown that up to 20% of adolescents have moderate to high levels of depressive symptoms and that persistent depressed mood may interfere with

the formation of a healthy self-concept and lead to the adoption of behaviors that may be detrimental to health and psychosocial well-being, such as drug use. Negative body image may lead to greater depressive symptoms in adolescents. Additionally, there is reason to believe that girls become less satisfied with their bodies as they grow older, compared with boys, and that negative body image is more strongly related to depressive symptoms for girls than for boys. However, these issues have rarely been studied longitudinally, and there is little research investigating the causal role that body image may play in adolescent depression.

## **2. What was the purpose of the study?**

This study proactively assessed the body image and depressive symptoms of Norwegian boys and girls, for 5 years starting at age 13, in order to evaluate the causal role of body image in adolescent depressive symptomology. In addition, the study was designed to assess gender differences in body image, depressive symptomology, and the relationship between them.

### **Method**

#### ***Participants***

The empirical basis for this research stemmed from the Norwegian Longitudinal Health Behaviour [NLHB] Study. The NLHB Study is a panel study in which a cohort of adolescents (and their parents) were followed from age 13 (in 1990) to age 23 (in 2000). In this article, we report data on 645 adolescents (326 boys and 319 girls), mainly from three measurement occasions: at ages 13 (1990), 15 (1992), and 18 (1995). The adolescents who represent this cohort participated in all three measurements. The original sample was drawn from a total of 130 urban and rural schools in the county of Hordaland, Norway, and 22 schools were selected to participate. Initially 1,195 seventh graders (age 13) and their parents were invited to participate. Written informed consent was obtained from 927 pupils and their parents. Refusals from pupils ( $n = 46$ ; 3.8%), refusals from parents ( $n = 222$ ; 18.6%), and pupils with obvious inconsistent answers ( $n = 0.3\%$ ) resulted in a final sample of 924 participants. These participants represented 77% of the total sample of 1,195 adolescents. The 645 adolescents [that] constitute the present cohort represent 69% of the seventh graders who participated at baseline in 1990.

- ▶ *(This is certainly a high survey response rate. However, we might be concerned that the 31% of adolescents who did not participate includes a higher percentage of severely depressed individuals than those who participated. Eliminating depressed individuals would be expected to attenuate the study findings.)*

### **3. Who were the participants?**

Six hundred forty-five boys and girls from urban and rural schools in Hordaland, Norway, voluntarily completing the NLHB Study with the permission of their parents. All adolescents were 13 years old in 1990.

### **4. What are some questions regarding gender group equivalence?**

We do not actually know from the article how many boys and girls were studied or how they were distributed with regard to school (urban vs. rural) or other demographic variables.

### **Procedure**

All data were obtained through self-administered questionnaires. Data collections were performed in 1990, 1991, 1992, 1993, 1995, 1996, 1998, and . . . 2000. At data collections in 1990, 1991, 1992, and 1993, the respondents were contacted at their schools, and the questionnaires were handed out by university staff during school hours, without teachers being present in class. In 1995, 1996, and 1998, the questionnaires were sent by mail to the participants.

Body image was measured by a four-item scale tapping general satisfaction/dissatisfaction with body and appearance. . . . The items are: (a) I would like to change a good deal about my body; (b) By and large, I am satisfied with my looks; (c) I would like to change a good deal about my looks; [and] (d) By and large, I am satisfied with my body. Answering categories for the body image items and the depressed mood items were: (1) does not apply at all; (2) does not apply well; (3) applies somewhat; (4) applies fairly well; (5) applies well; and (6) applies exactly. Two of the items were recoded, so that increased scores indicate a more positive body image. Cronbach's alpha for the scale was 0.85, 0.91, and 0.90 in 1990, 1992, and 1995, respectively.

Seven items comprised the depressed mood/depressive tendencies scale. . . . The scale is made up of the following items: (a) I often feel depressed without really knowing why; (b) Sometimes I think everything is so hopeless that I don't feel like doing anything; (c) I don't think I have anything to look forward to; (d) Sometimes I am just that depressed that I feel most like staying in bed for the whole day; (e) I am often sad without seeing any reason for it; (f) I think my life is mostly miserable; [and] (g) Sometimes I think my life is not worth living. The answering categories were the same as for the body image scale. . . . Applied measure resembles . . . presence of sadness, hopelessness and miserable feelings. . . . Cronbach's alpha was 0.83, 0.87, and 0.90 in 1990, 1992, and 1995,

respectively. Test–retest reliability was tested in 1991 by having respondents responding to the questionnaire one more time one week after the first completion. A correlation of 0.87 was observed between total scores, while the correlations between the single items varied between .52 and .80.

In the 1996 survey, we included the Center for Epidemiological Studies Depression Scale (CES-D) . . . in the questionnaire. In a previous article . . . we conducted analyses comparing the depressed mood scale used in the present paper and the CES-D instrument. The CES-D is a 20-item instrument specifically constructed to assess depressive symptoms in general adult and adolescent populations. The items reflect the presence of depressed mood, feelings of guilt and worthlessness, feelings of helplessness, and loss of appetite and sleep disturbance. . . . The Pearson correlation coefficient between the CES-D scale and the depressed mood scale was 0.72 . . . . Refined analysis using latent variables (EQS) revealed a correlation between the two scales of 0.82. From internal consistency, test–retest reliability, and concurrent validity with the CES-D scale, we considered the depressed mood scale to be an appropriate, reliable, and valid instrument.

- ▶ *(The authors have paid considerable attention to the reliability of the instruments used. Internal measures of reliability were obtained in 1990, 1992, and 1995 and ranged from 0.83 to 0.91, which is excellent. Test–retest reliability for the depressive symptoms scales as 0.87 with an intertrial interval of one week, which is also quite good. Finally, the concurrent validity with the CES-D scale of depression was 0.72, which is quite acceptable. Note that the only validity evidence presented for the body image measure is content validity—i.e., the reasonableness of the items.)*

### **5. What was the procedure?**

Participants completed a self-administered questionnaire at ages 13, 15, and 18. The questionnaire contained a four-item scale tapping general satisfaction with body and appearance and a seven-item scale tapping depressive symptoms. At ages 13 and 15, the questionnaires were administered by university staff during school hours, and teachers were not present. At age 18, the questionnaires were mailed to respondents.

### **6. What are some questionable aspects of the procedure?**

The third testing condition differed from the first two in that the 1990 and 1992 assessments were proctored in a classroom and the 1995 assessments were completed

through the mail. Although the teacher was not present in the classroom (which was a strength of the study design), and responses were written and presumably not shared, students may have been less comfortable acknowledging negative symptomatology in the presence of their peers.

## **Results**

### ***Depressed Mood and Body Image in Boys and Girls: Distribution of Scores***

To test for significance of difference in mean scores at different ages and for sex differences, *t* tests for paired and independent samples were applied. . . . The mean scores in depressed mood among girls were 2.34 (*SD* = .89) at age 13, 2.56 (*SD* = 1.02) at age 15, and 2.51 (*SD* = 1.09) at age 18. The mean depressed mood score increased significantly for girls from ages 13 to 15 ( $p < 0.1$ ), and from ages 13 to 18 ( $p < 0.1$ ). The difference between ages 15 and 18 was not significant. The mean scores in depressed mood among boys were 2.21 (*SD* = .89), 2.18 (*SD* = .97), and 2.19 (*SD* = 1.04) at ages 13, 15, and 18, respectively. There was no change in depressed mood mean scores by age. Girls reported significantly higher depressed mood scores than boys at ages 15 and 18 ( $p < .001$ ), while no difference was observed at age 13.

. . . The body image mean scores for boys and girls at ages 13, 15, and 18 [were as follows]. The mean levels among girls were 3.54 (*SD* = 1.18) at age 13, 3.40 (*SD* = 1.28) at age 15, and 3.66 (*SD* = 1.19) at age 18. As expected, the decrease in level of body image was significant from ages 13 [to] 15 ( $p < .1$ ), while there was a significant increase from ages 15 [to] 18 ( $p < .001$ ). The corresponding body image scores among boys were 4.02 (*SD* = 1.06), 4.30 (*SD* = 1.08), and 4.45 (*SD* = .95). As expected, there was a significant increase in positive body image among boys between ages 13 and 15 ( $p < .001$ ), and 15 and 18 ( $p < .01$ ) (the difference between 13 and 18 was also significant ( $p < .001$ )). There was a significant sex difference in body image at all ages, with boys reporting higher levels of positive body image than girls ( $p < .001$ ).

### ***The Relation Between Body Image and Depressed Mood—Cross-Sectional Analysis***

To examine the cross-sectional relationship between body image and depressed mood, Pearson's correlation coefficient was computed separately for boys and girls at ages 13, 15, and 18 (Table 13.2). As expected, a significant negative correlation was observed in both genders at all ages. The correlations were moderate to high for both boys and girls. Among boys, there was a tendency for a stronger correlation between body image and depressed mood at age 13 as compared to 15 and 18. Among girls, the strongest association was found at age 15, and the

weakest association [was found] at age 13. The correlation coefficients appeared to vary between boys and girls at the various ages. To test for significant sex differences, the correlations were converted to z-scores using Fisher's transformations. The analysis showed that the only significant gender difference was observed at age 15 years ( $z = 3.024$ ;  $p < .01$ ), with a stronger body image-depressed mood correlation in girls than boys.

**Table 13.2** Pearson's Correlations Between Body Image and Depressed Mood, Separately for Boys and Girls

|       | Age    |        |        |
|-------|--------|--------|--------|
|       | 13     | 15     | 18     |
| Boys  | -.53** | -.42** | -.48** |
| Girls | -.38** | -.60** | -.56** |

Note: Correlations are significant at the  $p < .01$  level (2-tailed).

It has been demonstrated in previous research . . . that when body image was controlled for, the gender difference in depressive symptoms seemed to disappear. Thus, we conducted a hierarchical multiple regression analysis introducing sex in the first step and including body image in the second step. The initial beta of sex was .19 at age 15, and .15 at age 18, but sex turned out to be nonsignificant when body image was introduced in the model. Thus, in the second step, body image was the only significant predictor for depressed mood in both genders.

### **7. What were the results regarding body image and depressive symptoms from the cross-sectional analyses?**

Depressed mood increased from ages 13 to 18 for girls but not for boys. Girls also reported higher depressed mood than boys. Body image decreased for girls from age 13 to 15 but increased from 15 to 18. Body image increased for boys from ages 13 to 18. Boys reported more positive body image than girls at all ages. There was a significantly negative correlation between body image and depressed mood for both boys and girls. The correlation between gender and depressive symptoms was nonsignificant when controlling for body image.

#### ***Body Image and Depressed Mood—Longitudinal Analyses***

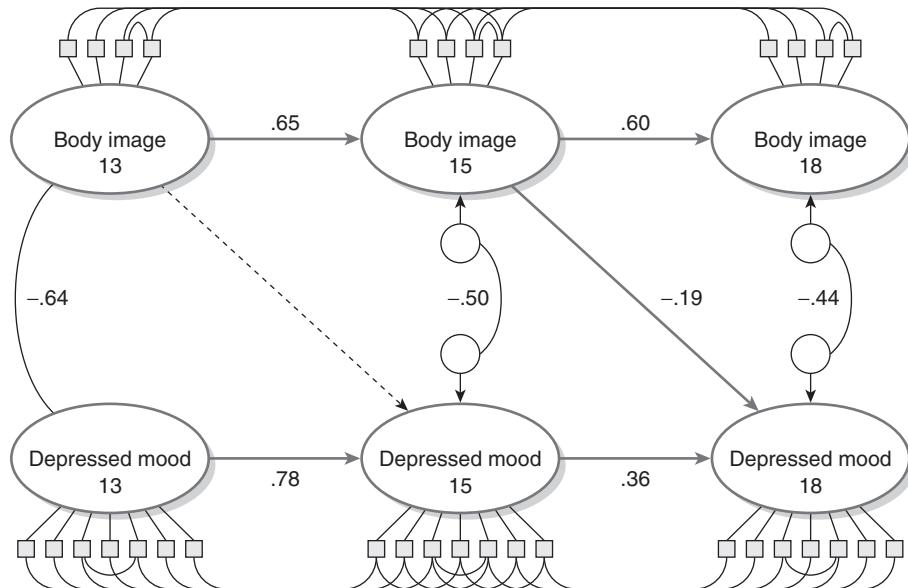
In the longitudinal analyses we applied **structural equation modeling (SEM)**, by means of EQS . . . based on the observed variance-covariance [matrixes].

- ▶ *(From a practical point of view, structural equation modeling can be thought of as a combination of factor analysis and regression analysis. Latent variables [i.e., unobserved hypothetical constructs such as depression and body image] are assessed by observed variables [the items]. These latent variables are then related to each other in a regression-type model, with regression parameters now called structural parameters. The fit of the model to the data is evaluated via a number of statistical measures, including the **Root Mean Square Error of Approximation [RMSEA]**, the **Comparative Fit Index [CFI]**, the **Standardized Root Mean Square Residual [SRMR]**, and **Akaike's Information Criterion [AIC]**. Models can be compared with each other via chi-square tests. A model that fits the data well and also fits better than other competing models is chosen as the final model. The structural parameters of this final model are then substantively interpreted.)*
  
- ▶ *(EQS is one of several specialized software programs that can be used for structural equation modeling. Other popular programs include AMOS, LISREL, and SAS PROC CALIS.)*

Our strategy was to test and compare alternative models. . . . Six latent variables were involved—that is, body image and depressed mood at three different time points. Nested models can be subjected to a formal  $\chi^2$ -difference test—that is, to test whether the relaxing of specific constraints (i.e., freeing parameters) yields significantly better fit. In order to avoid capitalizing on chance characteristics, we adopted a  $p$ -level of .01 for the tests. Initially we tested an independent model, a model [that] assumes . . . all the variables are zero-correlated. This model is not plausible theoretically but functions as a basis of comparison for the theoretically based models. . . . The next step consisted of testing a basic model, which merely estimated the structural parameters within each type of latent variables over time (e.g., body image age 13 on body image age 15). Additionally this model included auto-correlations for the factor residuals in the observed variables—that is, one item in the depressed mood scale at age 13 was allowed to correlate with the corresponding item at age 15. . . . Model 2 included the cross-effects from body image on depressed mood over time. This model yielded a significantly better fit for both girls and boys;  $\chi^2$  diff = 32.8/11.49,  $df = 2$ ,  $p < .01$ . In model 3, the opposite effect was tested: [cross-time] cross-trait effects from depressed mood on body image. However, this model did not provide any significant reduction to the  $\chi^2$ -value. Model 4 yielded a better fit than model 2 ( $\chi^2$  diff = 134.45/74.38,  $df = 2$ ,  $p < .01$  for girls/boys). . . . Increased fit could be obtained by allowing for some correlation between factor residuals in the measurement models (model 5). Such a modification is not theoretically based, but residuals are meaningful, in as much as certain items in a scale will have a common variance that is not shared by the other items. As the path coefficients in model 5



**Figure 13.2** Boys. Causal, Longitudinal Model of the Relation Between Body Image and Depressed Mood.



Note: The dotted line represents nonsignificant parameters.

$\chi^2 = 905$ ,  $df = 447$ , CFI = .91, RMSEA = .06.

- ▶ (In general we want a final model with a nonsignificant chi-square value [unlikely with large sample sizes] or one where  $\chi^2 / df < 2.0$ , an RMSEA less than .08. AIC is useful for comparing models where smaller values suggest better models.)
- ▶ (In SEM diagrams such as those in Figures 13.1 and 13.2, boxes represent observed variables [questionnaire items in this case], ellipses represent the latent variables underlying the observed variables, curved arrows represent correlations, and straight arrows represent causal paths. Usually, the absence of an arrow indicates no correlation or causality.)

... Whereas there were significant gender differences in the effects of body image and depressed mood at age 13 upon depressed mood at age 15 (i.e., girls had a cross-trait cross-time effect, and thus a lower same trait cross-time effect), the effect from body image at 15 upon depressed mood at 18 was not significantly different across gender. Consequently, although we can conclude that this latter effect was significantly greater than zero only among boys, we cannot conclude that the effect was significantly greater among boys than among girls.

To summarize, for boys and girls alike . . . depressed mood at one point in time was to a relatively high extent predicted by depressed mood at an earlier time point, and corresponding effects were found for body image. This finding indicates a certain degree of stability across time for both depressed mood and body image. . . . Secondly, for both genders, one cross-trait cross-time effect was identified. That is, among girls, body image at age 13 contributed to depressed mood at age 15, even when controlling for the effect of depressed mood at age 13 . . . A similar effect was observed among boys, however in this case at a later age (from age 15 to age 18).

### **8. What were the results regarding body image and depressive symptoms from the longitudinal analyses?**

From the ages of 13 to 18, past depression predicts future depression and past body image predicts future body image (not surprising). For girls, poorer body image at age 13 contributed to their depressed mood at age 15. For boys, poorer body image at 15 contributed to their depressed mood at age 18.

### **Discussion**

. . . We were able to address the hypothesized causal relationship between body image and depressed mood empirically. Five major findings emerged from the study. First, and congruent with what we expected, girls on average reported higher depressed mood levels and more negative body image than boys at all ages. Second, as hypothesized, body image and depressed mood was significantly correlated at all measurement occasions. However, contrary to our expectation, the association was nearly as strong for boys as for girls. Fourth, we found empirical support for the existence of a causal relationship between body image and depressed mood in that body image predicted changes in depressed mood longitudinally. In contrast, and contrary to what we expected, no evidence for a longitudinal causal effect of depressed mood upon body image was obtained.

Consistent with previous investigations . . . girls' preponderance in depressed mood was clearly demonstrated during the [5-]year period. The one exception was at age 13, when no significant sex difference in depressed mood was observed. This . . . may be related . . . boys reporting about the same levels or higher levels than girls before the age of 13. . . . Because in this study we did not have data before age 13, we were not able to demonstrate if or when a possible [crossover] in depressed mood score occurred between boys and girls. . . .

. . . Adolescents girls in the present cohort at all ages perceived their bodies more negatively than did boys. This finding . . . may be due to girls tending to be

more critical of their physical appearance than boys, a situation which might reflect that the cultural expectations of appearance affect girls more than boys . . . Moreover, our findings are in keeping with the psychological processes outlined in the theory of objectification . . . and the consequences caused by experiences of increased (for girls) and decreased (for boys) discrepancy, respectively, between the ideal and the real body selves occurring during normal maturation.

. . . Although we were not in [the] position to study these hypothesized processes empirically, our findings were congruent with what would be their expected consequences. . . .

Contrary to what we had expected, no systematic gender differences in body image/depressed mood associations were observed. This finding may seem to suggest that even though the absolute levels of body image and depressed mood differed between boys and girls, body image was as strongly related to depressed mood in boys as in girls. . . . When the difference in body image level was controlled for, the initially observed sex difference in depressed mood score disappeared. . . .

To the best of our knowledge, and after having performed a literature search, the present study represents the only longitudinal investigation [that] has examined the relationship between body image and depressed mood over a relatively long period of time. . . .

The present study elucidated the importance of body image for the development of depressed mood in boys and girls. Even though girls reported lower body image and higher depressed mood scores than boys, the correlation between body image and depressed mood was just as strong for boys. Likewise, longitudinally body image led to changes in depressed mood scores in both genders. In contrast, a longitudinal effect of depressed mood upon body image perceptions was not identified in the present study.

### **9. What did the authors conclude?**

The authors concluded that girls as a group have higher levels of depressive symptoms and poorer body image than boys from ages 13 to 18. The correlation between body image and depressive symptoms is significant (and roughly equal) for both girls and boys. Body image contributes causally to depressed mood in adolescents, but depressed mood does not appear to affect body image (or at least there was no evidence of it in this study).

### **10. Are these conclusions justified?**

There is certainly good evidence for both the cross-sectional and longitudinal trends described. The question of causality is a bit thornier. The authors have shown

that body image and depressive symptoms clearly covary, and we know that body image at age 13 precedes depression at age 15 and that body image at 15 precedes depression at 18. The third condition for causality requires that the covariance between the cause and effect remains nonzero after partialling out other possible causes. In this case, body image predicts later depressive symptoms, even when controlling for earlier depressive symptoms. As long as there are no other variables that may be causing *both* low body image *and* depressive symptoms, the authors' conclusions are justified.

- ▶ *(It is worth noting that the study was completed with Norwegian students and that there may be a difference between depressive symptoms as measured in the study and actual clinical depression. Therefore we need to be careful how far we generalize the study results to other populations and conditions.)*

### **STUDY EXAMPLE 13.2: "A PANEL STUDY OF MEDIA EFFECTS ON POLITICAL AND SOCIAL TRUST AFTER SEPTEMBER 11, 2001"**

This is a second example of a longitudinal design. The authors study the relationship between media consumption and political trust, social trust, and confidence in government following the terrorist attacks of September 11, 2001. For brevity, we will focus on the issue of political trust.

#### **The Study**



Gross, K., Aday, S., & Brewer, P. (2004). A panel study of media effects on political and social trust after September 11, 2001. *The Harvard International Journal of Press/Politics*, 9, 49–73. Copyright © 2004 by Sage.

#### **Problem**

In recent years, scholars and commentators have focused increased attention on the consequences of political trust and social trust. For example, studies have shown that political trust affects compliance with governmental authority . . . , voting behavior . . . , and policy preferences. . . . Similarly, studies have demonstrated that social trust shapes cooperation, volunteering, giving to charity, and policy preferences. . . . Most important, perhaps, political trust helps to provide leaders and institutions with the political capital to take

action when a problem emerges . . . , and social trust helps to provide citizens with the social capital to do the same. . . .

. . . Conventional wisdom seems to be that television use is associated with greater political cynicism, whereas newspaper use is associated with greater trust. Indeed, there is evidence linking media use and political trust. The empirical record, however, suggests that the connections between the two may be conditional and complex . . .

One possibility is that in times of crisis, political elites will present a consensus—transmitted to the public through the mass media—in their messages about government and government policy. Past research suggests that when political elites are generally in agreement, the public comes to support government authorities and policy. For example, Brody . . . argues that international crises lead to increased presidential approval because political figures whom one would normally expect to provide negative comments either rally to the president or remain silent. In the absence of opposition from legitimate sources, news coverage during crises results in an “unusually uncritical mix of news.” . . . Thus, such surges in approval result not simply from patriotic rallying around the flag but from supportive messages that reach the public through the media. Zaller . . . suggests that a similar dynamic—which he calls a “mainstream effect”—occurs when elites across the political spectrum achieve consensus in support of a particular policy. In response, public opinion becomes more supportive of that policy.

The general process described . . . may extend more broadly to political trust and confidence in government institutions. Put another way, coverage lacking in critical perspectives may lead not only to rallies around the president and administration policies but also around the larger political system. If, in the wake of September 11, 2001, the nature of messages of political elites resembled the patterns described by these authors, then this may have had consequences for the relationships between media use, on one hand, and political trust and confidence in institutions, on the other. In this study, we examine these relationships. We then speculate about potential connections between media content and media effects after the terrorist attacks. . . .

Specifically, the analyses that follow address three sets of questions. First, what effects, if any, did television news use and newspaper use have on trust in government, confidence in governmental institutions, and social trust during the immediate aftermath of the terrorist attacks? Was media use associated with increased trust in the fall of 2001, when trust was at its peak and coverage might have included few critical perspectives on the government? Second, to what extent did television news and newspaper use explain individual-level change in trust in government, confidence in governmental institutions, and social trust over the course of the following year? Did the nature of the relationship between media use and

trust change over this period? Third, do we find evidence of differences in the effects of television news use and newspaper use, as some previous studies have?

## **Method**

### *Procedure*

Our data come from a three-wave national telephone survey of Americans eighteen years and older. Random digit dialing was used to select the sample. The first wave of the survey, in which 1,235 respondents were interviewed, was in the field from October 24 to November 5, 2001. The second wave of the survey was in the field from February 28 to March 26, 2002. Sixty-one percent (758) of the respondents from the first wave were reinterviewed in March, with the bulk of the interviews occurring in the first two weeks. The third wave of the survey was in the field from August 20 to September 13, 2002, with more than 90% of the interviews taking place in August. Four hundred and seventeen respondents (34 percent of the initial sample) completed all three interviews. . . .

### *Participants*

For the panel survey, the average length of the first interview was around fifteen minutes; the average length of the second and third interviews was around ten minutes. Of the 417 respondents interviewed in all three waves, just more than half were women (53%). Twenty-eight percent had a high school education or less, another 29% had some education beyond high school but no college degree, 26% had earned a college degree, and 17% had postgraduate training. Family income broke down as follows: less than \$30,000, 21%; between \$30,000 and \$50,000, 22%; between \$50,000 and \$75,000, 24%, between \$75,000 and \$100,000, 12%; and more than \$100,000, 11%. Ten percent refused to give their income. Ten percent came of age (i.e., turned eighteen) in the 1990s or later, 17% during the 1980s, 24% during the 1970s, 27% during the 1960s, 14% during the 1950s, and 9% during the 1940s or before. Forty-one percent of respondents described themselves as Democrats or leaning Democratic, 11% described themselves as independents, and 47% described themselves as Republican or leaning Republican. African Americans and Hispanics were underrepresented within the sample (less than 5% for each). As is often the case with panel data, our respondents also overrepresented the educated and somewhat underrepresented those with lower incomes when compared to census data. According to the 2000 census, 48% of the population [25] and older have a high school degree or less, 27% have some college or an associate degree, 16% have a college degree, and 9% have an advanced degree; 29% make less than \$25,000, 29% make between

\$25,000 and \$50,000, 19% make between \$50,000 and \$75,000, 10% make between \$75,000 and \$100,000, and 12% make more than \$100,000.

When we compared the panel respondents (the 417 respondents who answered all three interviews) to the initial sample of 1,235 respondents on the demographic and attitudinal measures discussed in this article, the differences between the panel and the full sample from the first wave were insignificant except in the cases of education, age, and social trust; even here the differences were small. . . .

The response rate for the first wave of the panel survey was 16%, with 34% of the original respondents completing both of the subsequent waves of the survey. The cooperation rate for the second wave (completes/completes + refusals) was 78%. The cooperation rate for the third wave was 80%. Clearly, our response rate necessitates caution in generalizing the results to the American public. On the other hand, the trends in political trust and social trust within our panel are consistent with the trends found in other national surveys at the time. Moreover, in this study we focus not on the absolute levels of political and social trust but on the relative trends in these forms of trust, as well as on the effects of media use on each. . . .

### ***Variables***

*Trust in government.* In each wave of the survey, respondents were asked a question that numerous studies, including the American National Election Studies, have used to measure generalized trust in government: "How much of the time can you trust the government in Washington to do what is right—just about always, most of the time, or only some of the time?" Responses were coded so that *just about always* = 1, *most of the time* = .5, and *only some of the time* = 0.

*Confidence in government institutions.* In each wave of the survey, respondents were asked a series of questions about how much confidence they had in a set of specific government institutions: the presidency, Congress, the military, the Federal Bureau of Investigation (FBI), and the Central Intelligence Agency (CIA). These questions, which borrowed a format employed in the General Social Surveys and Gallup polls, presented four response options: *a great deal* (coded as 1), *a good deal* (coded as 2/3), *some* (coded as 1/3), and *very little* (coded as 0).

*Media use.* The first and third waves of the panel survey included a series of questions about media consumption. Specifically, respondents were asked whether they watched or read each of the following *regularly* (coded as 1), *sometimes* (coded as 2/3), *hardly ever* (coded as 1/3), or *never* (coded as 0): national nightly network news, [24]-hour cable news channels, and daily newspapers. We created a measure of television news use by averaging across national nightly network news and [24]-hour cable news use. Among all [first] wave. . . respondents, the means for newspaper use and television news use were .70 (*SD* = .32) and .69 (*SD* = .26), respectively.

Among panel respondents, they were .72 ( $SD = .31$ ) and .68 ( $SD = .27$ ) in fall 2001 and .70 ( $SD = .33$ ) and .62 ( $SD = .27$ ) in late summer 2002.

- (Other variables collected in the first wave were party identification, patriotism, volunteering, gender, ethnicity, education, and income.)

## Data Analysis

### Surges and Declines

Surveys conducted in the month following September 11, 2001, recorded dramatic surges in trust in government, confidence in government institutions, and social trust. . . . The results of the first wave of our survey paralleled the results of these other surveys, giving us greater confidence in the external validity of our subsequent analyses. . . .

In the year that followed the terrorist attack, however, trust in government, confidence in institutions, and social trust all declined to varying degrees. Table 13.3 illustrates the trends for our measures among panel respondents. The decline was particularly pronounced for trust in government.

**Table 13.3** Trust in Government, Confidence in Government Institutions, and Social Trust Among Panel Respondents: Percentages Expressing Trust or Confidence

|  | October–<br>November<br>2001 | March<br>2002 | August–<br>September<br>2002 |
|--|------------------------------|---------------|------------------------------|
| How much of the time can you trust the government in Washington to do what is right—just about always, most of the time, or only some of the time? | 65                           | 58            | 50                           |
| How much confidence do you have in the military—a great deal, a good deal, some, or very little?   | 83                           | 83            | 78                           |
| How much confidence do you have in Congress?   | 36                           | 35            | 28                           |
| How about the presidency?  | 74                           | 71            | 63                           |
| The FBI or Federal Bureau of Investigation?  | 43                           | 43            | 39                           |
| The CIA or Central Intelligence Agency?  | 43                           | 39            | 36                           |
| Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?                         | 68                           | 62            | 63                           |
| Would you say that most of the time people try to be helpful or that they are just looking out for themselves?                                     | 81                           | 77            | 77                           |

Note:  $N = 417$ . For the first item, trusting responses include *just about always* and *most of the time*. For the confidence items, trusting responses include *a great deal* and *a good deal*.

### *Explaining Trust in Government and Confidence in Government Institutions*

Our first analysis examined what shaped trust in government and confidence in government institutions in the immediate aftermath of the terrorist attacks. Our model included not only the first-wave measures of television news and newspaper use but also the demographic measures and measures for two other key variables—party identification and patriotism—that could have shaped each dependent variable. Table 13.4 presents the results among the full first-wave sample. One finding that stands out is the consistent effect of television news use on trust in government and confidence in government institutions. For each of the dependent variables, this effect was positive and statistically significant at the .05 level or better. To be sure, the impact of watching television news was neither consistent nor overwhelming in its magnitude: It ranged from .07 for confidence in the presidency to .17 for confidence in the CIA, with a mean effect across dependent variables of .11. Our results do indicate, however, that all else being equal, television news consumption was positively associated with trust in government and confidence in government institutions at the peak of the surge. In contrast, we found no evidence of a relationship between newspaper use and either trust in government or confidence in government institutions during the initial aftermath of September 11, 2001; the coefficient for newspaper use did not attain statistical significance for any of the dependent variables.

The results presented in Table 13.4 also shed light on some of the other factors that shaped trust in government and confidence in government institutions during the surge. To begin with, Republicans were significantly more likely than Democrats to express trust in government and to express confidence in every institution except one. The magnitude of party identification's effect varied in understandable ways: Its impact was greatest for confidence in the presidency (.19), the institution with the clearest partisan connotations; its impact was weaker for general trust in government and confidence in executive branch institutions (i.e., the military, the FBI, and the CIA); and it had no discernible impact on confidence in Congress, which had divided party control at the time. Additionally, the coefficient for patriotism was positive, significant, and relatively sizable in every case, suggesting that patriotic sentiments shaped trust in government and confidence in government institutions in the immediate aftermath of the terrorist attacks. In short, television news use was not the only influence on trust in government and confidence in government institutions during this period.

**Table 13.4** Influences on Trust in Government and Confidence in Government Institutions [From] October [Through] November 2001

|                                | Trust in<br>Government | Confidence in<br>Presidency | Confidence in<br>Congress | Confidence in<br>Military | Confidence in<br>FBI | Confidence in<br>CIA |
|--------------------------------|------------------------|-----------------------------|---------------------------|---------------------------|----------------------|----------------------|
| Watches TV news                | .08*<br>(.04)          | .07*<br>(.03)               | .12**<br>(.03)            | .09**<br>(.03)            | .13**<br>(.04)       | .17**<br>(.04)       |
| Reads newspaper                | .04<br>(.03)           | -.01<br>(.03)               | .02<br>(.03)              | -.04<br>(.03)             | -.00<br>(.03)        | -.00<br>(.03)        |
| Party identification           | .11**<br>(.03)         | .19**<br>(.02)              | -.01<br>(.03)             | .07**<br>(.02)            | .10**<br>(.03)       | .10**<br>(.03)       |
| Patriotism                     | .28**<br>(.04)         | .30**<br>(.03)              | .19**<br>(.03)            | .33**<br>(.03)            | .19**<br>(.04)       | .18**<br>(.04)       |
| Female                         | -.02<br>(.02)          | -.02<br>(.02)               | -.00<br>(.02)             | -.01<br>(.01)             | .01<br>(.02)         | .00<br>(.02)         |
| Black                          | .02<br>(.05)           | -.09*<br>(.04)              | -.05<br>(.04)             | -.00<br>(.03)             | -.02<br>(.04)        | -.03<br>(.04)        |
| Hispanic                       | .03<br>(.05)           | .00<br>(.04)                | -.05<br>(.04)             | -.04<br>(.04)             | -.01<br>(.05)        | -.00<br>(.05)        |
| Age (in years/100)             | .18**<br>(.06)         | -.01<br>(.05)               | -.14**<br>(.05)           | -.20**<br>(.05)           | -.28**<br>(.06)      | -.23**<br>(.06)      |
| Education                      | -.02<br>(.04)          | -.07*<br>(.03)              | .01<br>(.03)              | -.09**<br>(.03)           | -.12**<br>(.04)      | -.09*<br>(.04)       |
| Income                         | -.00<br>(.04)          | .04<br>(.03)                | -.02<br>(.03)             | .02<br>(.03)              | -.04<br>(.04)        | -.06<br>(.04)        |
| Constant                       | .16<br>(.05)           | .38<br>(.05)                | .31<br>(.05)              | .62<br>(.04)              | .47<br>(.05)         | .41<br>(.05)         |
| Standard error of the estimate | .31                    | .26                         | .27                       | .23                       | .29                  | .29                  |
| R <sup>2</sup>                 | .09                    | .19                         | .05                       | .17                       | .09                  | .08                  |
| n                              | 1,026                  | 1,040                       | 1,041                     | 1,038                     | 1,034                | 1,015                |

Note: Table entries are ordinary least squares (OLS) regression coefficients with standard errors in parentheses. Results were similar when estimated using ordered probit.

\* p < .05; \*\* p < .01.

Of course, trust and confidence declined in the year following the terrorist attacks. What shaped *individual-level* change in such trust and confidence? Put another way, among which respondents were the declines most pronounced? To answer this question, we estimated static-score models for each third-wave dependent variable. Each model included a lagged dependent variable (the first wave value of the dependent variable), the third-wave television news and newspaper use measures, and change in newspaper and broadcast television use, along with party identification, patriotism, and the demographic variables. According to Finkel . . . , static score (or conditional change) models of this sort are generally superior as models of change to simple "unconditional" models of change scores. The coefficients we report can also be interpreted as the causal effects of the independent variables on change in trust or confidence, controlling for the respondent's initial level of trust or confidence. . . .

As Table 13.5 shows, all of the coefficients for television news use and newspaper use fell short of statistical significance. Controlling for prior levels of trust and confidence, we found no significant effects of media use or change in media use on changes in trust or confidence. Put another way, we cannot say that respondents who watched television news or read newspapers regularly were any more or less likely than nonwatchers to exhibit declines in trust in government or confidence in government institutions, controlling for initial levels of trust or confidence; nor can we say that respondents who changed their media use were any more or less likely than those who did not to exhibit such declines. On the other hand, the extent of change did vary across partisan lines. The positive and statistically significant effects of party identification on trust in government (.09) and confidence in the presidency (.17) indicate that Democrats were more likely than Republicans to exhibit declining trust in government and confidence in the presidency, all else being equal. Not surprisingly, again, the role of partisanship was particularly pronounced in the case of confidence in the presidency. By a similar logic, the positive and statistically significant effects of patriotism on confidence in the military (.10,  $p < .10$ ) and the CIA (.14) indicate that respondents who identified themselves as extremely patriotic were less likely than those who identified themselves as not especially patriotic to exhibit declining confidence in each of these institutions.

We know that in the aggregate the public's confidence in governmental institutions and trust in government changed over this period, yet our analysis suggests that media use had little to do with individual-level changes. How, then, do we explain declining trust and confidence? The results in Table 13.5 also suggest that the impact of television news on trust and confidence had faded in the year following the terrorist attacks. Contemporaneous television news use was not

**Table 13.5** Influences on Trust in Government and Confidence in Government Institutions [From] August [Through] September 2002

|                                | Trust in<br>Government | Confidence in<br>Presidency | Confidence in<br>Congress | Confidence in<br>Military | Confidence in<br>FBI | Confidence in<br>CIA |
|--------------------------------|------------------------|-----------------------------|---------------------------|---------------------------|----------------------|----------------------|
| Lagged dependent variable      | .44** (.04)            | .34** (.05)                 | .48** (.05)               | .46** (.05)               | .45** (.05)          | .46** (.04)          |
| Watches TV news                | .04 (.06)              | .01 (.06)                   | -.00 (.06)                | .02 (.05)                 | .03 (.06)            | .05 (.06)            |
| Reads newspaper                | -.09 (.05)             | -.05 (.05)                  | .06 (.05)                 | .06 (.04)                 | -.01 (.05)           | .01 (.05)            |
| Change in TV news watching     | -.05 (.07)             | -.05 (.07)                  | -.05 (.07)                | .01 (.06)                 | .01 (.07)            | .09 (.07)            |
| Change in newspaper reading    | .04 (.06)              | .01 (.06)                   | -.05 (.05)                | -.04 (.05)                | .00 (.05)            | -.04 (.05)           |
| Party identification           | .09* (.04)             | .17** (.04)                 | -.04 (.04)                | .04 (.04)                 | .04 (.04)            | -.01 (.04)           |
| Patriotism                     | .05 (.06)              | .09 (.06)                   | .06 (.05)                 | .10 (.05)                 | .09 (.05)            | .14* (.05)           |
| Female                         | -.05 (.03)             | .01 (.03)                   | -.01 (.03)                | -.08** (.02)              | -.04 (.03)           | -.04 (.03)           |
| Black                          | .09 (.08)              | .08 (.08)                   | .05 (.07)                 | .24** (.07)               | .02 (.07)            | .18* (.07)           |
| Hispanic                       | .00 (.09)              | -.01 (.08)                  | -.03 (.08)                | .08 (.07)                 | -.01 (.08)           | .01 (.08)            |
| Age (in years/100)             | -.20 (.10)             | -.03 (.10)                  | -.05 (.10)                | -.23* (.09)               | -.15 (.10)           | -.27** (.10)         |
| Education                      | -.05 (.06)             | .00 (.06)                   | -.04 (.05)                | -.14** (.05)              | -.08 (.05)           | -.06 (.05)           |
| Income                         | .03 (.06)              | .03 (.06)                   | .01 (.05)                 | .04 (.05)                 | -.04 (.06)           | .08 (.06)            |
| Constant                       | .21 (.08)              | .21 (.09)                   | .16 (.08)                 | .43 (.08)                 | .32 (.08)            | .23 (.08)            |
| Standard error of the estimate | .25                    | .25                         | .23                       | .22                       | .24                  | .24                  |
| R <sup>2</sup>                 | .32                    | .24                         | .25                       | .36                       | .30                  | .34                  |
| n                              | 355                    | 355                         | 358                       | 359                       | 355                  | 344                  |

Note: Table entries are ordinary least squares (OLS) regression coefficients with standard errors in parentheses. Results were similar when estimated using ordered probit.

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

systematically related to trust and confidence in late summer 2002, as it had been in fall 2001. In another analysis (not shown), we examined the effects of August [through] September 2002 media use on August [through] September 2002 trust and confidence, dropping the change in media use and lagged dependent variables (in other words, we ran the same model reported in Table 13.4 using third-wave television and newspaper use measures to predict third-wave trust and confidence measures). The coefficients for television news use were weaker than they had been in the first wave and only significant in the case of confidence in the CIA (.11,  $p < .05$ ). Although we cannot say that television news use explained individual-level changes in trust and confidence, taken together, the changes in the effects of television news could partly account for the declines in trust and confidence we see at the aggregate level.

In sum, we found that television news use was one of several factors (along with party identification and patriotism) that shaped trust in government and confidence in government institutions just as they were surging in the immediate aftermath of September 11, 2001. One year later, our results suggest the positive impact of television news use had eroded. We did not find any evidence, however, that television news use (or, for that matter, newspaper use) explained individual-level change in trust in government and confidence in government institutions; in contrast, party identification and patriotism did shape such change in some cases . . .

### **Discussion**

Our results showed that television news use, but not newspaper use, was associated with higher levels of trust in government and confidence in institutions during the surge that followed the terrorist attacks of September 11, 2001. One year later, neither form of media use shaped trust in government or confidence in institutions. We cannot attribute individual-level changes in trust and confidence over the year that followed to media use or changes in media use, however.

What might explain this pattern of findings? We suspect that the content of media coverage—and changes in that content—may account for our results . . . Immediately after September 11, the news appears to have been dominated by progovernment messages rather than by the negativity and game framing described by Patterson . . . and others . . . . Many journalists appeared to engage in “patriotic journalism” . . . Flag logos appeared on the news, banners with “Attack on America” flashed across the screen, anchors and reporters appeared on air wearing flag pins and ribbons and displaying emotions of horror and outrage at the attacks. Moreover, the bipartisan spirit that dominated politics following the attacks dampened partisan dissent and critical perspectives within news coverage . . .

If negative and interpretive coverage of politics fosters political cynicism as Patterson . . . and other[s] have argued, and if the public lends support when elites exhibit consensus . . . then coverage in the period immediately after the attacks should have fostered political trust and confidence. In the case of television news use, we find evidence consistent with this account. Furthermore, the relationship between national television news use and trust in government and confidence in government institutions weakened as the content of political coverage reverted to a more typical pattern (as our third-wave results show). On the other hand, we did not find any evidence that media use or change in media use explained individual level changes in trust in government or confidence in governmental institutions; those who watched more television news or read newspapers more frequently were no more or less likely to exhibit declining trust than those who did not. It is also important to remember that the effects of television news, although significant across a variety of measures of trust and confidence, were not overwhelming in the aftermath of the attacks. Television news use was only one of several factors (including party and patriotism) that shaped trust in that period. This result is consistent with a portrait of limited, rather than massive, media effects during crisis situations . . .

We believe our pattern of results suggests that media coverage can foster trust in government, confidence in governmental institutions, and social trust . . .

In addition, we should note that our study shares important limitations with many of the previous studies in this area. We infer media effects from survey findings, rather than capturing them through experimental control. Our analyses control for the most likely sources of spurious relationships between media use and trust. Nonetheless, we cannot be certain of the causal direction of these effects. Also, we cannot link our respondents to the specific content they watched; thus, we can only speculate about the reasons behind differences in the effect of media over time and across formats. Nor do we delve into differences in either content or effects within either medium under study (e.g., we do not compare Fox News Channel and CNN). We do, however, see our account as plausible and consistent with the available evidence.

## **CRITIQUE OF STUDY EXAMPLE 13.2**

1. What was the rationale for the study?
2. What was the purpose of the study?
3. What was the procedure?
4. Who were the participants?

5. What variables were measured?
6. What is the reliability and validity of the measures?
7. How was the issue of differential attrition addressed?
8. How were the data analyzed?
9. What were the results?
10. What do the authors conclude?
11. Are these conclusions justified?
12. Are there concerns about generalizability?

For answers to these questions, see page 376.

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