

Freudian Defense Mechanisms and Empirical Findings in Modern Social Psychology: Reaction Formation, Projection, Displacement, Undoing, Isolation, Sublimation, and Denial

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ABSTRACT Recent studies in social psychology are reviewed for evidence relevant to seven Freudian defense mechanisms. This work emphasizes normal populations, moderate rather than extreme forms of defense, and protection of self-esteem against threat. Reaction formation, isolation, and denial have been amply shown in studies, and they do seem to serve defensive functions. Undoing, in the sense of counterfactual thinking, is also well documented but does not serve to defend against the threat. Projection is evident, but the projection itself may be a by-product of defense rather than part of the defensive response itself. Displacement is not well supported in any meaningful sense, although emotions and physical arousal states do carry over from one situation to the next. No evidence of sublimation was found.

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Nearly all adults hold preferred views of themselves. In most cases, these are favorable views of self—indeed, somewhat more favorable than the objective facts would entirely warrant, as nearly all writers on the self have observed. A recurrent problem of human functioning, therefore, is how to sustain these favorable views of self. Patterns of self-deception can help create these inflated self-perceptions (for reviews, see Baumeister, 1998; Gilovich, 1991; Taylor, 1989). Yet a particular crisis in self-perception may arise when an internal or external event occurs that clearly violates the preferred view of self. In such cases, it is necessary for the self to have some mechanism or process to defend itself against the threatening implications of this event. Such processes are commonly called *defense mechanisms* (e.g., Cramer, 1991; A. Freud, 1936).

Sigmund Freud proposed a set of defense mechanisms, in a body of work that has long been influential (e.g., S. Freud, 1915/1961a, 1923/1961c, 1926/1961d). His work focused on how the ego defended itself against internal events, specifically, impulses that were regarded by the ego as unacceptable. He emphasized sexual or aggressive desires that would violate the ego's internalized standards, such as if those desires were directed toward one's parents. In his view, the efforts by the self to avoid recognizing its own sexual and aggressive desires were systematically important in shaping the personality.

Modern personality and social psychology has not generally accepted the view that personality is heavily based on efforts to disguise one's sexual and aggressive impulses. Nonetheless, the need for defense mechanisms remains quite strong. A revisionist idea, proposed by Fenichel (1945), is that defense mechanisms are actually designed to protect self-esteem. This reformulation is far more in keeping with current work in social and personality psychology than Freud's original view was. One can search long and hard through today's research journals without finding much evidence about how human behavior reflects attempts to ward off sexual and violent feelings, but evidence about efforts to protect self-esteem is abundant.

Ultimately, the view that defense mechanisms are oriented toward protecting self-esteem may not contradict Freud's views so much as it merely changes his emphasis. Acknowledging that one possessed socially unacceptable impulses of sex or violence may have constituted a self-esteem threat for the Victorian middle-class adults he studied. Today's adults are presumably less afraid of having sexual or violent feelings, and indeed the absence of sexual interest may constitute an

esteem threat to some modern citizens—in which case their defense mechanisms would ironically try to increase the self-perceived frequency or power of sexual impulses, contrary to the Freudian pattern.

Most researchers in personality and social psychology today would readily acknowledge that people defend their self-concepts against esteem threats. Yet relatively few researchers have made explicit efforts to relate their findings about defensive processes to the general theory of defense mechanisms. The purpose of the present article is to review research findings from personality and social psychology that can be interpreted as reflecting the major defense mechanisms that Freud proposed. In a sense, then, this review will ask how Freud's list of insights stacks up against today's experimental work.

How much should one expect? Obviously, any accuracy at all would be impressive. Few researchers today would feel confident about having dozens of their theoretical hypotheses tested many decades into the future by empirical techniques that they today could not even imagine.

To anticipate the conclusion, we found substantial support for many (but not all) of the processes of defense Freud outlined. There are also some aspects to the causal process that Freud does not appear to have anticipated, as one would naturally expect. We shall describe a series of the major defense mechanisms and conclude that some of his ideas were correct, some require minor or major revision, and others have found little support. All in all, this amounts to a rather impressive positive testimony to Freud's seminal theorizing.

Plan and Task

If Freud had furnished a definitive list of defense mechanisms, the organization of the present article would be straightforward: We would proceed through each of the mechanisms in turn, evaluating how current research findings fit, alter, or contradict it. Unfortunately, Freud does not appear to have ever furnished either a comprehensive list of defense mechanisms or an integrative theory of defenses (see Laplanche & Pontalis, 1973). Anna Freud (1936) did attempt a systematic taxonomy of defense mechanisms, but her list is too long and too oriented toward psychopathology for our purposes.

Our inelegant solution is therefore to focus on seven defense mechanisms that Freud described and that have been relevant and influential to subsequent work. Our selection of these has also been shaped by the

intention of reviewing current research in personality and social psychology, as opposed to studying abnormal populations and pathological processes, so we have chosen to emphasize defenses that are arguably most relevant to normal (as opposed to clinical) human functioning. The list is as follows: reaction formation, projection, displacement, undoing, isolation, sublimation, and denial.

With each defense mechanism, we shall first ask whether research evidence shows that it actually occurs. The strength and generality of this evidence must also be considered. If the defense mechanism is supported in some sense, then we must ask what the cognitive, affective, and behavioral processes are. A related question is whether there is evidence of defensive motivation, as opposed to evidence of some merely cognitive error or bias. To qualify as a full-fledged defense, it must do more than merely make people feel better: It must actually ward off some threat to the self.

Purely conscious maneuvers are not generally considered full-fledged defense mechanisms. Like self-deception generally, defense mechanisms must involve some motivated strategy that is not consciously recognized, resulting in a desirable conclusion or favorable view of self that is conscious.

Review of Findings

In this section, we shall examine seven major defense mechanisms in turn. The review will try to ascertain how well each defense mechanism is supported in modern research in personality and social psychology and what theoretical adjustments may be required to make the theory fit modern findings.

Repression is missing from this list (although denial, which is conceptually similar, is included), and this omission deserves comment, especially insofar as other treatments of psychological defenses have emphasized repression almost to the exclusion of all other defenses—as possibly encouraged by Freud himself. In some interpretations of Freudian theory, repression is simply one of the defense mechanisms, and in others it is an aspect of all of them. Our approach, however, regards repression in a way that more complex interpretations of Freud have done. Specifically, repression is not a defense mechanism per se, and indeed defense mechanisms are called into being because of the inefficacy of repression. In this view, repression is simply the blotting of

threatening material out of the conscious mind, and if that could succeed, then there would be no need for defense mechanisms.

Relevant evidence on this point was provided by Wegner and his colleagues (Wegner, 1989, 1994; Wegner, Schneider, Carter, & White, 1987). Although they have used the term “suppression” rather than “repression,” the theme of forcibly ejecting unwanted thoughts from the conscious mind is common to both. Wegner et al. showed that people can indeed be partly successful at suppressing such thoughts, but then later these thoughts increase in frequency. Wegner et al. dubbed this subsequent increase the “rebound effect,” but it closely parallels Freud’s (1915/1961b) concept of the “return of the repressed.” The point of this effect (regardless of the term) is that simply shutting undesired thoughts out of the mind is not viable as a long-term solution. Hence the need for defense mechanisms that can be more successful.

Reaction Formation

Concept. The concept of reaction formation involves converting a socially unacceptable impulse into its opposite. To apply this notion to esteem protection, one may propose the following: People respond to the implication that they have some unacceptable trait by behaving in a way that would show them to have the opposite trait. Insinuations of hostility or intolerance might, for example, be countered with exaggerated efforts to prove oneself a peace-loving or tolerant person.

Evidence. The original ideas about reaction formation pertained to aggressive and sexual impulses, and these are still plausible places for finding defenses, provided that acknowledging those impulses or feelings would damage self-esteem. With sex, there are undoubtedly still cases in which people regard their own potential sexual responses as unacceptable.

One such finding was provided by Morokoff (1985), who exposed female subjects to erotic stimuli after assessing sex guilt. Women high in sex guilt would presumably regard erotica as unacceptable, and consistent with this attitude they reported lower levels of arousal in response to those stimuli. Physiological measures suggested, however, that these women actually had higher sexual arousal than other participants. The contradiction between the genital response and the self-report findings suggests

that these women subjectively repudiated their physical sexual arousal and insisted that they were not aroused.

A comparable finding with male subjects was recently reported by Adams, Wright, and Lohr (1996). They assessed homophobia and then exposed participants to videotapes depicting homosexual intercourse. Homophobic men reported low levels of sexual arousal, but physiological measures indicated higher levels of sexual response than were found among other participants. Thus, again, the subjective response reported by these participants was the opposite of what their bodies actually indicated. This finding also fits the view that homophobia may itself be a reaction formation against homosexual tendencies, insofar as the men who were most aroused by homosexuality were the ones who expressed the most negative attitudes toward it.

Prejudice would provide the most relevant form of unacceptable aggressive impulse, because American society has widely endorsed strong norms condemning prejudice. If people are led to believe that they may hold unacceptably prejudiced beliefs (or even that others perceive them as being prejudiced), they may respond with exaggerated displays of not being prejudiced.

An early and convincing demonstration of reaction formation (although it was not called that) against prejudice was provided by Dutton and Lake (1973; see also Dutton, 1976). Nonprejudiced, egalitarian, White individuals were provided with false physiological feedback allegedly indicating that they held racist prejudices against Blacks. In one study, for example, they were shown slides of interracial couples, and the experimenter commented that the subject's skin response indicated severe intolerance of interracial romance, which was tantamount to racism. After the procedure was ostensibly completed, the participant left the building and was accosted by either a Black or a White panhandler. People who had been implicitly accused of racism gave significantly more money to the Black panhandler than people who had not been threatened in that way. Donations to the White panhandler were unaffected by the racism feedback. The implication was that people became generous toward the Black individual as a way of counteracting the insinuation that they were prejudiced against Blacks.

A parallel finding with gender prejudice was reported by Sherman and Garkin (1980). Participants were pretested on attitudes toward feminist issues and categorized as high or low in feminism. They were then randomly assigned to solve a sex-role logic problem, another reasoning

problem of comparable difficulty, or no problem. The sex-role problem was actually a trick problem designed to play on stereotypes, with the result that participants who failed to solve it ended up feeling implicitly accused of sexist bias. All participants then read an abbreviated version of a sex discrimination case in which a university chose to offer a faculty position to a man instead of a woman. Participants who had been exposed to the threatening implication of sexism gave significantly harsher verdicts compared to those in the control conditions, and there was a similar effect on subjective ratings of the university's decision. Thus, when people were tricked into implicitly accusing themselves of sexism, they responded by asserting views that were the extreme opposite of sexism. Moreover, this reaction formation was most pronounced when nonsexist attitudes were particularly central to the self-concept.

There is a related set of findings in which White subjects show preferential favorability toward Black stimulus persons without any threat. One might argue that White people often feel threatened by the possibility of seeming racist when interacting with Black people. Rogers and Prentice-Dunn (1981) found that White subjects playing the role of teacher administered fewer shocks to a Black than to a White confederate in the role of learner, although the effect was reversed if the learner had previously insulted them. Johnson, Whitestone, Jackson, and Gatto (1995) showed that White subjects as simulated jurors gave lighter sentences to Black than to White defendants, although this effect was reversed when a more severe sentence to the Black man could be defended on nonracial grounds. Shaffer and Case (1982) found that heterosexual simulated jurors gave lighter sentences to a homosexual defendant than to a heterosexual one, although this effect was found only among people who scored low in dogmatism.

Whether these effects constitute reaction formation is not entirely clear. Biernat, Manis, and Nelson (1991) provided evidence that people may use different standards when judging minority targets as opposed to judging members of the majority category. For example, a Black candidate for law school might be judged more favorably than a White candidate with identical credentials if the judges use more lenient criteria for Blacks. (Then again, the use of more lenient criteria might itself qualify as a reaction formation, insofar as it is a strategy to defend against one's own prejudice.)

Another interpretive issue is whether these apparent reaction formations reflect intrapsychic defensive responses or self-presentational

ploys. The antiprejudice norms that now dominate White American society may, after all, motivate people to avoid being perceived by others as prejudiced, but it is conceivable that many people care only about the *appearance* of prejudice and might privately hold strongly prejudiced views.

The concept of reaction formation could be applied to Devine's (1989) theory of prejudice. In her view, prejudiced and nonprejudiced people hold similar stereotypes and experience similar activation of these stereotypes when an appropriate target is present. Prejudicial stereotyping is thus an automatic response. The difference is that nonprejudiced people override this automatic stereotyping response with a controlled process that replaces prejudicial thoughts with egalitarian, tolerant ones. This mechanism is thus an intrapsychic response that rejects unacceptable thoughts and instead asserts the opposite, socially acceptable view.

This form of self-regulatory response to prejudice was demonstrated by Monteith (1993), who found that low prejudiced people inhibited prejudicial responses to jokes about gays as a consequence of activation of prejudice-related discrepancies. Likewise, Klein and Kunda (1992) found that people who expected to interact with members of a stigmatized group (and therefore were motivated to see them favorably) expressed more positive stereotypes of this group, as compared with people who did not expect such an interaction. It is, however, not entirely clear whether these findings indicate that the reaction is sufficiently unconscious to qualify as a defense mechanism and whether the socially undesirable views are shielded from the person's own conscious recognition.

Reaction formation may also be involved when self-appraisals paradoxically rise in response to negative feedback. McFarlin and Blascovich (1981) showed that people with high self-esteem made more optimistic predictions for future performance following initial failure than following initial success. Baumeister, Heatherton, and Tice (1993) showed this confidence to be irrational and unwarranted, and also showed it to be sufficiently powerful to motivate costly monetary bets. These responses do appear defensive and irrational, for there is no obvious reason that confidence should be increased by an initial failure experience.

Last, some evidence suggests a loose pattern of increasing favorable self-ratings in response to receiving bad (instead of good) personality feedback. Baumeister and Jones (1978) found enhanced self-ratings in response to bad feedback that was seen by other people, although the

increased favorability was found only on items unrelated to the content of the feedback, indicating a compensatory mechanism rather than a pure reaction formation. Baumeister (1982b) provided evidence that people with high self-esteem were mainly responsible for the effect. Greenberg and Pyszczynski (1985) showed that this inflation of self-ratings occurred even on private ratings, although again mainly in response to public feedback. They pointed out that public bad feedback constitutes a stronger threat than private feedback. Their finding that private self-ratings also showed the reaction formation pattern of increased favorability is apparently an intrapsychic response rather than a purely self-presentational strategy.

Conclusion. Plenty of research findings conform to the broad pattern of reaction formation, defined loosely as a means of defending against esteem threat by exhibiting an exaggerated or extreme reaction in the opposite direction. Although the mechanism underlying reaction formation may not conform precisely to Freud's model, the human phenomena he characterized with that term do appear to be real. In particular, when people are publicly or implicitly accused of having socially undesirable sexual feelings, prejudiced attitudes, or failures of competence, some respond by asserting the opposite (and attempting to prove it) to an exceptionally high degree.

The consistency of these results across seemingly quite different spheres of esteem threat suggests that reaction formation deserves acceptance in social and personality psychology. Apparently it is one of the more prominent and common responses to esteem threat.

Still, the causal process underlying reaction formation remains to be elaborated. Many of the findings may be merely self-presentational strategies designed to correct another person's misperception rather than a genuinely intrapsychic defense mechanism. Moreover, if reaction formation can be firmly established as an intrapsychic response, it would be desirable to know how it operates. How, for example, does someone manage to feel sexually turned off when his or her body is exhibiting a strong positive arousal? How do people come to convince themselves that the money they give to a Black panhandler reflects a genuine attitude of racial tolerance rather than a response to the specific accusation of racism they recently received—especially when, as the researchers can show, those people would not have given nearly as much money to the same panhandler if they had not been accused of racism?

Projection

Concept. Projection is a popular concept in everyday discourse as well as in psychological thought. In its simplest form, it refers to seeing one's own traits in other people. A more rigorous understanding involves perceiving others as having traits that one inaccurately believes oneself not to have. As a broad form of influence of self-concept on person perception, projection may be regarded as more a cognitive bias than a defense mechanism. Nonetheless, projection *can* be seen as defensive if perceiving the threatening trait in others helps the individual in some way to avoid recognizing it in himself or herself, and indeed this is how Freud (e.g., 1915/1961a) conceptualized projection. Thus, there are multiple ways of understanding projection, and they vary mainly along the dimension of how effectively the undesirable trait or motive is repudiated as part of the self.

Evidence. The simpler, more loosely defined version of projection is fairly well documented. The *false consensus effect*, first described by Ross, Greene, and House (1977), is probably the best-known form of this, insofar as it is a broad tendency to assume that others are similar to oneself. The false consensus effect is defined as overestimating the percentage of other people who share one's traits, opinions, preferences, or motivations. This effect has both cognitive and motivational influences (Krueger & Clement, 1994; Marks, Graham, & Hansen, 1992; Sherman, Presson, & Chassin, 1984); is found if anything more with positive, desirable traits than with bad traits (Davis, Conklin, Smith, & Luch, 1996; Halpern & Goldschmitt, 1976; Lambert & Wedell, 1991; Paulhus & Reynolds, 1995); has been especially shown with competitiveness (Kelley & Stahelski, 1970a, 1970b) and jealousy (Pines & Aronson, 1983); and is linked to higher self-esteem and lower depression (Campbell, 1986; Crocker, Alloy, & Kayne, 1988). Some contrary patterns have been found, especially insofar as people wish to regard their good traits and abilities as unusual (Dunning & Cohen, 1992; Suls & Wan, 1987). In general, these findings show that people like to see themselves as similar to others, but the evidence does not show this to be a defense mechanism that helps people avoid recognizing their own bad traits.

It could be argued that the false consensus effect achieves a kind of defensive success insofar as it reduces the distinctiveness of one's bad traits. To be the only person who cheats on taxes or breaks the speed limit

would imply that one is uniquely immoral, even evil—but if everyone else is likewise breaking those laws, one's own actions can hardly be condemned with great force. Consistent with this, Sherwood (1981) concluded that attributing one's undesirable traits to targets who are perceived favorably can reduce stress. This explanation could also fit Bramel's (1962, 1963) demonstration that males who were told they had homosexual tendencies were later more likely to interpret other males' behavior as having similar tendencies. Likewise, it may explain the findings of Agostinelli, Sherman, Presson, and Chassin (1992): Receiving bogus failure feedback on a problem-solving task made people (except depressed people) more likely to predict that others would fail too.

None of these findings links seeing the trait in others to denying it in oneself, and so they fall short of the more rigorous definition of projection. Given the failure to show that projective responses can function to conceal one's own bad traits, Holmes (1968, 1978, 1981) concluded that defensive projection should be regarded as a myth. In retrospect, it was never clear how seeing another person as dishonest (for example) would enable the individual to avoid recognizing his or her own dishonesty. The notion that projection would effectively mask one's own bad traits was perhaps incoherent.

Recognizing the implausibility in the classical concept of projection, Newman, Duff, and Baumeister (1997) proposed a new model of defensive projection. In this view, people try to suppress thoughts of their undesirable traits, and these efforts make those trait categories highly accessible—so that they are then used all the more often when forming impressions of others (see Wegner, 1994; Wegner & Erber, 1992). In a series of studies, Newman et al. showed that repressors (as defined by Weinberger, Schwartz, & Davidson, 1979) were more likely than others to deny having certain bad traits, even though their acquaintances said they did have those bad traits. Repressors were then also more likely to interpret the ambiguous behaviors of others as reflecting those bad traits. Thus, they both denied their own faults and overinterpreted other people as having those faults.

The view that suppressing thoughts about one's undesirable traits leads to projection was then tested experimentally by Newman et al. (1997). Participants were given bogus feedback based on a personality test, to the effect that they had both good and bad traits. They were then instructed to avoid thinking about one dimension on which they had

received (bad) feedback. Next, they observed a videotape of a stimulus person and rated that person on all the dimensions on which they had received feedback. Participants rated the stimulus person about the same on all dimensions, except that they rated her higher on the trait for which they had received bad feedback and been instructed to suppress. They did not rate the stimulus person higher on traits for which they had received bad feedback without trying to suppress it. Thus, projection results from trying to suppress thoughts about some bad trait in oneself.

Conclusion. Considerable evidence indicates that people's conceptions of themselves shape their perceptions of other people. The tendency to see others as having one's own traits has limitations and is found with good traits along with bad ones. The view that people defensively project specific bad traits of their own onto others as a means of denying that they have them is not well supported. The concept of projection thus needs to be revised in order to fit modern research findings.

The view of projection as a defense mechanism is best supported by the findings of Newman et al. (1997), but even these deviate from the classic psychodynamic theory of projection. Newman et al. found that efforts to suppress thoughts about a particular bad trait made this trait into a highly accessible category that thereafter shaped the perception of others. In this view, the projecting of the trait onto other people is a by-product of the defense, rather than being central to the defensive strategy. To put this another way: In the original Freudian view, seeing the bad trait in another person is the essential means of avoiding seeing it in oneself. In Newman et al.'s view, however, the defense is simply a matter of trying not to recognize one's bad trait, and the success of that effort is not related to whether a suitable target for projection presents himself or herself.

This mechanism could well account for the observations that might have led Freud to postulate the defense mechanism of projection in the first place. After all, the person does refuse at some level to accept some fault in himself or herself and does, as a result, end up seeing other people as having that same fault. The Freudian view implied the transfer of the schema from one's self-concept directly into the impression of the other person. It may, however, be more accurate to see the effect on impression formation as simply a consequence of heightened accessibility resulting from efforts at suppression.

Displacement

Concept. Displacement refers to altering the target of an impulse. For example, an unacceptable violent impulse toward one's father might be transformed into a hostile attitude toward policemen or other authority figures. The targets of the actual aggression would be related by meaningful associations to the target of the original, inhibited impulse.

Evidence. Several studies have directly examined displacement of aggression. In a study by Hokanson, Burgess, and Cohen (1963), subjects were frustrated (or not) by the experimenter and then given an opportunity to aggress against the experimenter, the experimenter's assistant, a psychology student, or no one. The experiment yielded a marginal main effect for frustration, insofar as frustrated subjects were more aggressive than others, but the target made no difference. Measurements of systolic blood pressure did, however, suggest that tension levels among frustrated subjects dropped most when they aggressed against the experimenter, followed by the assistant, followed by the psychology major. Thus, the level of aggression remained the same whether it was aimed at the original target, at a relevant displaced target, or at an irrelevant target, but there was some physiological evidence suggesting that aggressing against the original target (or a closely linked one) was most satisfying.

The possibility of displaced aggression was also investigated by Fenigstein and Buss (1974). In this study, the instigator was not the experimenter, thereby removing alternative explanations based on the experimenter–subject relationship. Angered and nonangered subjects were given an opportunity to aggress either toward the instigator directly or toward a friend of his. As in the Hokanson et al. (1963) study, anger produced a main effect on aggression, but there were no differences in aggressive behavior as a function of target.

These findings can be interpreted in various ways. One might point to them as evidence for the high efficacy of displacement, given that people are equally aggressive toward other people as toward the person who has provoked them—suggesting, in other words, that the full amount of aggression can be displaced readily.

On the other hand, they could be interpreted as mere mood or arousal effects: People who are angry are more aggressive in general. Indeed, Miller (1948) showed similar effects with rats (e.g., attacking a dummy doll when the original enemy, another rat, is absent), and it is difficult to

assert that rats have defense mechanisms. Meanwhile, there is ample evidence that arousal can carry over from one situation to another. Research by Zillman and his colleagues has shown *excitation transfer* effects, in which arousal from one situation can carry over into another and influence aggressive behavior. Riding a stationary bicycle boosts arousal while not being either especially pleasant or unpleasant, but people who ride a bicycle are then subsequently more aggressive in response to a provocation than people who have not just exercised (Zillman, Katcher, & Milavsky, 1972), and indeed highly aroused subjects will ignore mitigating circumstances when someone provokes them, unlike moderately aroused people who will tone down their aggressive responses when they learn of the same mitigating facts (Zillman, Bryant, Cantor, & Day, 1975). Arousal that is caused by watching exciting films can likewise increase aggressive responses to provocation, even though the arousal itself has no relation to the provocation (Cantor, Zillmann, & Einsiedel, 1978; Ramirez, Bryant, & Zillman, 1982; Zillman, 1971).

To complicate matters further, recent work has not confirmed displacement. Bushman and Baumeister (1998) studied aggressive responses to an ego threat as a function of narcissism. Narcissists became more aggressive toward someone who had insulted them, but neither narcissists nor nonnarcissists showed any increased aggression toward a third person. This study was specifically designed to examine displaced aggression and failed to find any sign of it.

Scapegoating has been regarded as one instance of displaced aggression. In this view, people may become angry or hostile toward one target but are required for whatever reasons to avoid aggressing, and so they redirect their aggression toward a safer target. A classic paper by Hovland and Sears (1939) showed that the frequency of lynchings in the American South was negatively correlated with cotton prices. When prices dropped, according to the scapegoat interpretation, farmers suffered material deprivation, frustration, and hostility, and they redirected their hostility toward relatively safe targets in the form of Black men accused of crimes. Hepworth and West (1988) reexamined those data with more modern statistical techniques and confirmed the relationship.

Such evidence of scapegoating does not, however, embody a pure instance of displacement. The original hostility may not have had a specific target; rather, the cotton farmers may have been generally distraught. Recent work by Esses and Zanna (1995) offered an alternative

explanation in terms of mood-congruent stereotypes. They showed that bad moods induced by musical stimuli (hence having no esteem threat) caused negative stereotypes to become more accessible. This accessibility might explain the southern farmers' willingness to react violently to alleged misdeeds by Black citizens, without postulating that the violence was borrowed from another source or impulse.

In principle, unacceptable sexual or other impulses should also be amenable to displacement. Mann, Berkowitz, Sidman, Starr, and West (1974) exposed long-married couples to pornographic movies and found that this exposure led to an increased likelihood of marital intercourse on that same evening. This could be interpreted as displacement of sexual desire from the inaccessible movie star onto the socially acceptable target of one's mate. Unfortunately, however, this effect is likewise amenable to alternative explanations based simply on a generalized arousal response.

Conclusion. Despite the intuitive appeal of the concept of displacement, research has not provided much in the way of clear evidence for it. The handful of findings that do suggest displacement are susceptible to alternative explanations such as general tendencies for arousal or bad moods to facilitate aggression.

Some might contend that the arousal or mood effects should not be considered alternative explanations but rather can be subsumed under a looser conception of displacement. If Harry gets angry at his boss for criticizing him, and because of this anger Harry later gets into a fight with a stranger whom he normally might have ignored, should this qualify as displacement? It is, however, in no sense the same impulse that is displaced onto a new target. Whether he had inhibited his anger against his boss or expressed it might make no difference. Given that artificial mood or arousal inductions, even including the arousal from riding a bicycle, can produce the same readiness to respond aggressively to a new provocation, it seems misleading to speak of such an effect as displacement.

More to the point, there is no evidence that such arousal or mood effects serve a defensive function. Displacement would only qualify as a defense mechanism if the original, unacceptable impulse were prevented from causing some damage to self-esteem (or having some similar effect, such as stimulating anxiety). There is no evidence of any such effect.

The concept of displacement seems to be based on the now largely discredited catharsis model, according to which people have a well-defined quantity of aggressive impulses that require expression in one sphere or another. If aggression (or sexual desire, for that matter) cannot be expressed toward its original target, it must be redirected toward another, in this view. Meanwhile, of course, if it could be expressed toward the original target, there would be no displacement. Both effects seem highly implausible in light of what is now known about aggression. More likely, a person who is aggressive in one situation would be more, not less, aggressive in a subsequent one.

Undoing

Concept. The original term *Ungeschehenmachen* might be more literally translated as “un-make-happen” than “undoing.” The essence is that the person tries to alter the past so as to make some particular misfortune not have happened. It is associated with symbolically magical behaviors and obsessional neuroses (Laplanche & Pontalis, 1973).

Defined as the literal attempt to alter the past, undoing is impossible and hence pathological. One may, however, see a more normal and less extreme version of the same response among people who experience uncontrolled ruminations about past events, especially if these ruminations are characterized by strong or vivid counterfactual thoughts about how things might have gone differently.

Evidence. Social psychologists have not documented much in the way of behavioral attempts to undo the past, but there is plenty of evidence that people mentally replay prior events and imagine alternative acts and outcomes. Such observations emerged initially from a variety of studies on various misfortunes and traumas. Newman (1988), for example, showed that executives who had lost their jobs often replayed the scene of their firing repeatedly through the long hours and months of unemployment, often thinking up clever or sarcastic things they wish they had said. According to Newman, they knew that by that point no act on their part would have changed the outcome, but they wished they had lodged some symbolic protest with a dignified remark or even just a scream.

It must be added that counterfactual thinking is not necessarily deliberate or even desirable. One can scarcely assume that Newman’s subjects enjoyed replaying the humiliating scene of being fired hundreds of times.

Medvec, Madey, and Gilovich (1995) proposed that counterfactual thinking is often automatic. This automaticity seems necessary to explain their findings, which were that Olympic silver medalists were less happy about their achievement than the bronze medalists, even though the silver medal reflects a higher honor. According to Medvec et al., however, the silver medal automatically activates thoughts about how close one came to winning the gold, thereby evoking disappointment, whereas the bronze medalist recognizes how close he or she came to missing out on the medals entirely, which produces pride and satisfaction over the medal.

The notion that counterfactual thinking is linked to some wish to undo the past is suggested by evidence that it is more commonly linked to bad than good events. Sanna (1996) showed that spontaneous counterfactual thinking was more common after failures than after successes. In particular, failing when one had expected to succeed stimulated considerable counterfactual thinking.

Although trying to alter the past is inherently futile and by implication pathological, counterfactual thinking might be adaptive in normal life. Roese (1994) provided evidence of two kinds of benefits. Downward counterfactuals ("It could have been worse") made people feel better (see also Taylor, 1983). Upward counterfactuals ("It could have been better") helped people learn how they might perform better by altering their own responses. Roese showed that upward counterfactuals following experimentally manipulated failure led to significantly higher improvements on subsequent anagram performance, as compared with downward counterfactuals.

The value of counterfactual thinking for preventing future mistakes is suggested by several findings. Mandel and Lehrman (1996) showed that counterfactual thinking is more common following negative than positive outcomes, and more focused on prevention than cause, which fits the view that it serves a defensive function. Markman, Gavanski, Sherman, and McMullen (1993) found more counterfactuals following failure outcomes than following success or neutral outcomes, especially when there was the danger of another failure.

The notion that downward counterfactuals can produce affective benefits was implicit in Taylor's (1983) research on breast cancer victims, although she did not discuss the idea in those terms. She pointed out that most cancer victims compared themselves with others who were worse off, and these downward comparisons made them feel better. It seems likely that these comparisons implied counterfactual thinking about

one's own state. For example, a woman who recovered after losing a breast might feel better after comparing herself with other women who lost both breasts or whose cancer spread to other parts of the body. This affective improvement does not presumably imply that she derived pleasure from the suffering of others, but rather that she felt herself well off after imagining how much more she would have suffered had her cancer proceeded differently.

Not all counterfactual thinking helps defend the self against emotional distress or self-blame. Boninger, Gleicher, and Strathman (1994) found that counterfactual thinking tended to lead to regret and self-blame. Niedenthal, Tangney, and Gavanski (1994) showed that people's counterfactual thinking about shame experiences and shame situations tended to focus on altering qualities of the self, which tended to amplify feelings of shame.

Links to self-esteem also suggest adaptiveness or at least a positive contribution to successful defenses. Roese and Olson (1993) asked subjects to imagine how a recent event could have produced a different outcome. When the event had actually been a success, people with high self-esteem tended to focus their counterfactuals on what they had done, indicating that they regarded themselves as the decisive causes of the successful outcome. People with low self-esteem were less likely to do that. In contrast, when the outcome had actually been a failure, people with low self-esteem were more likely (than highs) to focus counterfactual thinking on their own actions. Thus, counterfactual thinking in people with low self-esteem after failure is apparently not successful in protecting self-esteem, because it implicates the self as responsible for the failure. In contrast, the response style of people with high self-esteem (who are more defensive in general; see Baumeister, 1993; also see Blaine & Crocker, 1993) implies that nothing they could have done would have avoided the failure, so by implication they should not be blamed for it.

Conclusion. Undoing can be conceptualized in ways that differ radically in extremity, and hence in consequences. Extreme undoing, which would involve inherently futile attempts to alter the past, has not been documented among normal individuals, and probably with good reason. On the other hand, mental ruminations over past events that imagine different actions and outcomes have been well documented in social and personality psychology.

Research on counterfactual thinking is relatively recent, and it seems fair to expect substantial advances and new directions. According to

present knowledge, counterfactual thinking tends to focus most heavily on unexpected bad events, and mental efforts to undo them are partly driven by automatic processes and esteem-related motivations. People may imagine how changes in their own behavior or in external events could have produced either better or worse outcomes. Imagining worse outcomes appears to bring fairly immediate benefits in terms of affective relief and comfort. Imagining better outcomes may be useful for future outcomes, particularly in terms of learning from one's mistakes so that one can perform better in future situations. There is some solid evidence of both benefits.

Thus, counterfactual thinking may be a common and adaptive response to misfortune, including esteem threats. But is it a defense mechanism? The findings linking counterfactual thinking patterns to self-esteem imply, but do not prove, that counterfactual thinking can help to maintain levels of self-esteem. Meanwhile, counterfactual thinking does not appear to accomplish the goal of altering the past, which formed the essence of the defense as originally suggested by Freud (1926/1961d). There is no sign that mentally replaying events and altering the outcome can serve to reduce damage to self-esteem or shield the self from disagreeable truths about itself. At best, one can suggest that learning from past mistakes can prevent further damage to self-esteem that would come from repeating them in the future. This is not, however, the same as defending the self against a threat that is already present.

Hence it seems preferable to classify undoing as a coping mechanism than as a defense mechanism. It can help people feel better, and it can help them alter their behavior in beneficial ways. Based on present evidence, however, it does not protect the self from the unwelcome implications of recent events in any meaningful way.

Isolation

Concept. Isolation involves creating a mental gap or barrier between some threatening cognition and other thoughts and feelings. Freud (1926/1961d) illustrated this with examples in which a person is following a train of thought and simply pauses to leave a gap of silence, after which the person switches to discuss a new, unrelated topic. Freud explained, "When a neurotic isolates an impression or an activity by interpolating an interval, he is letting it be understood symbolically that

he will not allow his thoughts about that impression or activity to come into associative contact with other thoughts” (p. 122).

As a defense, then, isolation does not actually remove the threatening idea from mental existence, but instead it minimizes its impact. Without associative connections, the threat will not be remembered often and cannot influence other spheres of mental activity. It can not have any substantial effect on self-esteem or the self-concept.

Evidence. Several sets of studies provide evidence of isolation. One is based on habitual repressors (Weinberger, Schwartz, & Davison, 1979). Although early studies suggested that repressors have fewer unhappy memories than other people (e.g., Davis, 1987), Hansen and Hansen (1988) showed that the difference lies mainly in secondary associations. Repressors in their study had negative emotional responses to bad memories that were just as strong as those of nonrepressors. These memories did not, however, evoke other negative emotions as strongly as they did for nonrepressors. Hansen and Hansen proposed a model of trait repressiveness based on an “architecture of less complex emotions”: Repressors do have bad experiences, but they fail to link these into associative networks with other bad experiences and negative emotions. Because these distressing memories remain relatively isolated in memory, repressors are less troubled by them than other people would be.

Consistent with the Hansen and Hansen model, Boden and Baumeister (1997) showed that repressors respond to upsetting stimuli (in this case, distressing film clips) by spontaneously generating happy thoughts or happy memories that are unrelated to the upsetting stimulus. This self-distraction process contradicts the usual mood-congruent recall pattern, and indeed repressors were faster to recall happy than sad memories after being put into a sad mood. Such a process would presumably help to minimize the amount of associative processing of unpleasant events, however, and so it fits the concept of isolation.

The contrast between repressors and depressed people is revealing. Multiple studies have suggested that repressors process threatening or unpleasant information in a minimal, rushed, or superficial fashion (e.g., Baumeister & Cairns, 1992; Bonanno, Davis, Singer, & Schwartz, 1991; Haley, 1974; Olson & Zanna, 1979). Depressed people, in contrast, process information (whether good or bad) thoroughly and in great, effortful detail (Edwards & Weary, 1993; Gleicher & Weary, 1991). This thorough processing apparently builds strong associative networks,

including links among affectively negative cognitions. Even when depressed people seek to distract themselves from an aversive thought, they come up with other aversive thoughts, thereby following chains of associations that perpetuate the negative affective state (Wenzlaff, Wegner, & Roper, 1988).

The view that minimal processing helps defend the self against esteem loss or negative affect has been confirmed by experimental studies that manipulate processing. Hixon and Swann (1993) gave people varying lengths of time with which to process evaluations they had received. People who had to respond quickly dismissed the bad feedback and embraced the good, thereby boosting their favorable self-appraisals. Those who reflected longer on the feedback were more prone to find some merit and accuracy in the bad evaluations. Using quite a different procedure, Schul and Schiff (1995) showed that people can remain relatively satisfied with their performance despite failure feedback if they can keep the feedback isolated from performance standards. The researchers presented the standard either before the performance, or after the performance but before the feedback, or after both the performance and the feedback. In the latter two cases, failure decreased satisfaction significantly, but not in the first case. Moreover, people in all conditions recalled the standard equally well. The implication is that people who were given the standard very early did not forget it—they simply ignored it. By isolating their feedback from the standard, they were able to minimize the threat.

Trivializing a misdeed may also be regarded as a form of isolation, especially when triviality is defined by the lack of association to anything of importance. Simon, Greenberg, and Brehm (1995) described trivialization as “the forgotten mode of dissonance reduction.” They had subjects write essays contrary to their beliefs. Normally such behavior produces changes in the basic attitude, but in this case they allowed subjects to dismiss their counterattitudinal behavior as a meaningless exercise that had no implications for their important attitudes. By bracketing off the behavior in this way, people were able to keep it from altering any important attitude.

Another relevant form of isolation is *temporal bracketing*, in which a misdeed or failure is effectively buried away in one’s past, so that the present concept of self is presumably untouched by it. It is noteworthy that there are various institutional practices based on this principle of freeing the present self from past misdeeds. Religious conversion and

“born again” experiences separate the adult self from a personal history of sin (e.g., Greven, 1977). Addiction recovery programs sometimes draw firm lines between the old, misbehaving self and the new, nonaddicted self. The legal system seals records of juvenile crime when the individual reaches adulthood, thus granting the young adult a fresh start.

Evidence of temporal bracketing was provided by Baumeister, Stillwell, and Wotman (1990) in a comparison of victim and perpetrator accounts. The perpetrator accounts had a severely shrunken time span, in comparison with the victim ones, and some perpetrators specifically indicated that their specific misdeeds had no bearing on their present lives or relationships. Baumeister and Ilko (1995) found that people with low self-esteem used temporal bracketing in describing their greatest failure experiences, in contrast with people having higher self-esteem who often acknowledged how that failure continued to affect them in the present. In both these studies, people frankly acknowledged that they had done something that reflected badly on them, but they defended their current self-concepts from the implications by isolating the event in the past.

There are additional defensive strategies that are conceptually related to isolation. Vallacher and Wegner (1985, 1987) contended that people can shift to heavily concrete levels of thinking in order to avoid meaningful implications of events and actions, as well as to avoid the emotions that accompany such meanings, and such shifts could be understood as a form of isolation. Suicide notes, for example, are characterized by an exceptionally high degree of concreteness (Henken, 1976), presumably because suicidal individuals are trying to escape from the emotional pain that would arise from contemplating their catastrophic life situation. More generally, the quest for such deconstructed states of mind, which offer escape from meaning, emotion, and self-awareness, has been documented in various places, including presuicidal behavior, binge eating, and sexual masochism (Baumeister, 1990, 1991; Heatherton & Baumeister, 1991). These patterns suggest a less adaptive view of this form of defense, and indeed there apparently can be pathological forms.

Another conceptual relative would be the *linguistic intergroup bias*, which involves describing one's own group's misdeeds in strongly concrete terms but using more abstract and hence more meaningful and evaluative terms to describe misdeeds by an out-group (Maass, Salve, Arcuri, & Semin, 1989). This bias increases under conditions of threat to group identity, and so it does appear to have a defensive aspect (Maass, Ceccarelli, & Rudin, 1996). Still, even though these phenomena resemble

isolation in important ways, they probably do not fit the definition of the defense mechanism well enough to be included as clear examples of it.

Conclusion. Although isolation is perhaps less distinctively Freudian in its concept than other defenses such as projection or reaction formation, it is well suited to a broad variety of cognitive models because of its simple reliance on association principles. For that reason, perhaps, isolation seems surprisingly well supported, even in articles that do not cite Freud's work or seem to recognize any connection with psychodynamic theory.

A variety of methods and findings supports the conclusion that people defend themselves against various threats by mentally isolating them. Repressors in particular have been shown to have impoverished associative networks surrounding unpleasant events and memories and to respond to emotionally distressing stimuli by spontaneously thinking of logically unrelated, affectively neutral or positive things. There are also signs that nonrepressors engage in similar strategies of cognitive isolation, particularly when dealing with seriously aversive events from their own past.

Thus, isolation appears to be real. Is it also a defense? The links to trait repressiveness, depression, and self-esteem suggest that it is effective. Repressors report few problems and surface happiness, which implies that their defenses and coping styles are effective at preventing bad events from upsetting them. The fact that some social institutions seem to legitimize a social form of isolation also supports the view that it can be an effective way of protecting one's present identity and self-concept from the implications of past misdeeds. Further research is needed, but at present it seems fair to count isolation as one of the more important and effective defense mechanisms.

Sublimation

Concept. Sublimation involves expressing an instinct in a sphere or manner that shows no relation to its original aim. Freud's most common allusions to sublimation featured how the sexual instinct could be channeled into artistic or intellectual endeavors (Laplanche & Pontalis, 1973). In particular, the concept of sublimation meant taking a fundamentally antisocial or unacceptable desire and channeling the energy into socially valued activities.

It is not entirely clear how sublimation could be recast in terms of defending self-esteem against threats. The issue, presumably, is that self-esteem would be damaged if certain sexual or aggressive impulses were acknowledged, and so one transforms them into socially acceptable forms in order to prevent that damage.

Evidence. Frankly we were unable to find any evidence to support the theory of sublimation. It is hard to provide convincing proof that something does not exist. Still, we can say with some confidence that there is not a single article in the *Journal of Personality and Social Psychology* between 1980 and 1996 that provides an even moderately convincing demonstration of sublimation. Indeed, we would settle for a reasonable analog, such as an effect that bore a moderate resemblance to sublimation, but we could find none.

Possibly the sublimation hypothesis could be tested with cross-cultural comparisons. Opportunities for sexual satisfaction have varied widely across cultural and historical boundaries, and it might be possible to learn whether periods of sexual inhibition are associated with greater creative or intellectual progress (or other benefits of sublimation). Initial consideration of extreme examples is not encouraging, however. In U.S. history, sexual abstinence was probably highest on the western frontier during the 19th century, given the gender imbalance that sometimes reached 200 men per woman (Guttentag & Secord, 1983). The Wild West was not, however, known as a period of artistic or intellectual creativity. In Western Europe, there is some suggestion that the Victorian era involved sexual repression, and sure enough there was significant intellectual progress during that time—but not necessarily more than the previous century (the “Enlightenment”), which was a time of sexual tolerance and even license (e.g., Stone, 1977). More generally, the great periods of intellectual and artistic flowering, such as the Italian Renaissance, Elizabethan England, or ancient Greece, were not periods of particularly repressed sexuality—if anything, they were the opposite.

Probably the most solid data relevant to sublimation are those relating sexual activity to educational attainment. If sexual energy is sublimated into intellectual work, then people who pursue high educations (presumably followed by intellectually more demanding careers) should show less sex than others. Although media stereotypes such as Hollywood movies continue to depict intellectuals as asexual beings, the data are generally contrary to this prediction. Highly educated people have sex

with more different people than less educated ones (Janus & Janus, 1993; Michael, Gagnon, Laumann, & Kolata, 1994). They engage in a greater variety of practices, such as oral sex, and they have more extramarital affairs (Janus & Janus, 1993). They have sex with their spouses at about the same frequency as less educated people, and well educated men are significantly less likely than other men to go an entire year without any sex (Michael et al., 1994). Undoubtedly multiple causes contribute to these findings, but they are difficult to reconcile with the hypothesis that education and intellectual activity benefit from sublimating the sex drive.

In seeking evidence for sublimation, one might point to the great intellectual achievements of medieval Christianity, which of course was dominated by celibate males. Then again, given the Catholic Church's near monopoly on learning, it seems unfair to compare the monks against the rest of the population at that time. (The reference to this period as the "Dark Ages" also suggests that the reign of celibate males was less creative and progressive than sublimation theory might lead one to hope.) A fairer test would perhaps compare the intellectual and artistic creativity of the celibate Catholic clergy against that of the Jews (or, later, the Protestants), whose clergy normally married. It seems doubtful that such comparisons will yield convincing support for the hypothesis that the lack of direct sexual outlets enabled the Catholics to make greater intellectual or artistic accomplishments.

Research examining the psychological correlates of celibacy among the Catholic clergy has failed to identify positive benefits of sublimation and if anything suggests that the effects are negative. Heuscher's (1972) interviews with 50 male and female clergy over a 10-year period led him to strongly question the contribution of celibacy to spiritual maturity. He found no evidence for the notion that "celibate life frees the religious [person] for his or her important tasks." Croghan (1974), a clinical psychologist and former priest, predicted that future empirical investigations of the priesthood would expose as a lie "the image of a celibate man fortified against sexual longing by prayer and work." Schoenherr and Greeley (1974) conducted a more systematic exploration of the factors contributing to a priest's decision to leave the ministry. They found that the most crucial variable predicting commitment was the desire for sex and marriage. This was after controlling for other psychological variables such as religious experiences, social support, and work satisfaction. Consistent with others' findings, Schoenherr and Greeley concluded that a significant percentage of priests question the benefits of sexual

sacrifice, and that such skepticism is often the driving force behind the decision to leave the profession.

Last, one might survey the lives of highly creative people for evidence of sublimation, on the theory that if sublimation really increases artistic productivity this would by and large be evident simply because of the difficulty in reaching the top. A survey of the sex lives of the most famous writers, musicians, and painters of the 20th century is beyond the scope of this article, but numerous anecdotal impressions lead us to doubt that such a survey would yield results congenial to notion of sublimation. If anything, the general reputation of lifestyles in colonies of musicians, writers, and painters involves sexual excess and misadventure rather than the opposite.

Conclusion. It is famously difficult to disprove many Freudian theories, and this difficulty is doubled in cases like this where one has to end up with the null hypothesis, and where clear operational definitions are lacking. Hence there is not likely to be any firm basis for declaring the theory of sublimation to be definitely wrong.

Still, the lack of any positive evidence of sublimation does provide a sobering contrast with some other defense mechanisms. We have found nothing at all to suggest that people can defend themselves against unacceptable feelings or desires by transforming them into socially desirable activities, thereby producing superior achievement in those activities. The best available data concern education and sex, and those findings consistently fail to support sublimation theory (and in some cases are in the opposite direction). At present, our best educated guess is that sublimation is not a genuine or effective defense mechanism, and it seems doubtful that anything resembling sublimation occurs at all.

Readers of early drafts of this article objected to our negative conclusions. In their view, the hypothesis has simply not been tested and therefore should not be rejected. We have two reasons for being skeptical of sublimation despite these objections. First, if it had been tested but null findings resulted, then these would likely not have been published (insofar as journals do not publish null findings), and so one would never find relevant evidence. It seems more plausible that researchers have attempted and failed than that they have never bothered to test a hypothesis as central and profound as sublimation. Second, this review has relied heavily on studies that were not designed as direct tests of defense mechanisms but that simply showed patterns of human cognition and

behavior that corresponded to Freud's theories. Social psychologists in particular seem prone to find results that resemble Freud's theories without using the labels that Freud used. Such evidence provides considerable support for several of the defense mechanisms, but sublimation is conspicuously lacking in support of that nature.

If this conclusion is mistaken, the present state of knowledge presents an inviting opportunity for some researchers to provide positive evidence of sublimation. That would mean that it has been merely some odd coincidence by which the theory of sublimation is correct yet has failed to receive any empirical support. We find that unlikely. In any case, the burden of proof is now very heavily on the side of anyone who still believes in sublimation.

Denial

Concept. Freudian conceptions of denial embrace everything from a rare, almost psychotic refusal to perceive the physical facts of the immediate environment, to the common reluctance to accept the implications of some event (e.g., Laplanche & Pontalis, 1973). The distinction between denial and repression is sometimes blurred and difficult to articulate in a meaningful fashion (Cramer, 1991). For the present, it is sufficient to consider denial as the simple refusal to face certain facts. Insofar as these facts are highly upsetting or represent potential damage to self-esteem, denial can in principle be a very useful defense mechanism.

Denial can be understood very narrowly or quite broadly. Broad definitions encompass an assortment of other defenses. Cramer (1991) subsumes perceptual defenses, constructing personal fantasies, negation, minimizing, maximizing, ridicule, and reversal as forms of denial. Paulhus, Fridhandler, and Hayes (1997) suggested that previous theoretical works were sufficient to distinguish at least seven different kinds of denial. If such a broad view proves correct, it may be more appropriate to regard denial as a category of defense mechanisms than as a single defense.

Evidence. Personality and social psychologists have not provided much evidence that people systematically refuse to accept the physical reality of actual events, especially when confronted with palpable proof. (They are of course willing to be skeptical of rumors or other reports that lack

credibility and that attest to disagreeable events.) On the other hand, there is abundant evidence that people will reject implications and interpretations that they find threatening.

Probably the most common form of denial involves dismissive responses to failure or other bad feedback. When people receive negative evaluations, they often reject the implications rather than incorporating them into their self-concepts. Making external attributions for failure, such as by pointing to bad luck or task difficulty, is one common and well-documented pattern of denying the implications of failure, because it insists that the failure does not reflect any lack of ability or of other good traits on the part of the self. Zuckerman (1979) reviewed 38 studies to confirm a general pattern that people make more external attributions for failure than for success.

A variation on the response of external attribution is to find faults or flaws in whatever method of evaluation led to one's bad feedback. Several studies have shown that students believe a test to be invalid or unfair when they perform poorly on it, whereas the same test will be regarded more favorably if their feedback is positive (Pyszczynski, Greenberg, & Holt, 1985; Schlenker, Weigold, & Hallam, 1990; Wyer & Frey, 1983; see also Kunda, 1990). Kernis, Cornell, Sun, Berry, and Harlow (1993) found this to be especially common among people with unstable high self-esteem, suggesting that it is an appealing mode of defense to people who especially need to shore up a fragile sense of personal superiority.

Another variation is to dismiss bad feedback as motivated by prejudice. Crocker, Voelkl, Testa, and Major (1991) measured self-esteem among African American subjects who had received negative feedback from a White evaluator. Self-esteem decreased in response to the criticism if the subject believed the evaluator to be unaware of his race. But if the subject thought the evaluator did know his race, then the evaluation had no effect on self-esteem. In the latter case, subjects attributed the bad evaluation to racist prejudice and therefore denied its validity, so it did not affect their self-esteem.

Researchers in health psychology have provided some findings that parallel the ones about threats to self-esteem. The notion that people use denial in response to health-related threats can be traced back at least to Kübler-Ross's (1969) listing of denial as one "stage" or type of response to learning that one's illness will be fatal. Recent work has demonstrated some mechanisms of denial with less extreme threats. Croyle and Hunt (1991) showed that people minimize risks, specifically reducing their

level of personal concern over a threatening test result if a confederate made a minimizing comment (“It doesn’t seem like a big deal to me”; p. 384). Ditto and Lopez (1992) showed that people selectively questioned the validity of a test when it produced an unfavorable result. Liberman and Chaiken (1992) showed that caffeine users tended to criticize (selectively) and dismiss evidence of a link between caffeine consumption and fibrocystic disease, whereas nonusers showed no such bias.

A quite different sphere in which to find evidence of denial is people’s projections about their personal futures. Weinstein (1980) demonstrated that people tend to be unrealistically optimistic, and subsequent work has confirmed that pattern repeatedly (see Taylor & Brown, 1988, for a review). That is, on average people think they are less likely than the average person to suffer various misfortunes, such as career failure, debilitating illness, or accidental crippling. Perloff and Fetzer (1986) coined the term “the illusion of unique invulnerability” to refer to the average person’s sense that bad things will not happen to him or her. By definition, the average person cannot be below average in the likelihood of experiencing such misfortunes, so the subjective perceptions must be based in some sense on a denial of the actual likelihood of such events.

The illusion of unique invulnerability does not remain an abstract or vague surmise. Burger and Burns (1988) linked it to sexual risk-taking, as in unprotected promiscuous sexual intercourse. It is well established that sexually transmitted diseases can be serious and even fatal and that they can be prevented by condom use, but people’s sense of personal invulnerability leads them to neglect such precautions. In such cases, denying risks makes people take more extreme ones.

Potentially maladaptive consequences of denial were also shown by Carver and Scheier (1994). In a longitudinal study, they measured stress and coping responses before an exam, right after the exam, and later when grades were posted. Various forms of denial were evident at all times, but none was effective overall at reducing negative emotions. Dispositional denial, evident particularly among people who used denial prior to the exam, led to greater feelings of threat and harm. Carver et al. (1993) found that denial predicted greater distress among breast cancer patients. A review by Suls and Fletcher (1985) concluded that avoidance responses such as denial promote positive outcomes in the short run but are inferior to other coping strategies in the long run.

Although denial may undermine some potentially adaptive responses, it may be quite adaptive in other circumstances. We have already noted

that denial of personal responsibility for failure tends to be associated with high self-esteem. Indeed, much of the impact of works by Alloy and Abramson (1979) and Taylor and Brown (1988) came from their conclusion that mental health and high self-esteem were associated with biased processing patterns that denied personal responsibility for bad outcomes while taking credit for good outcomes. Low self-esteem and depression were associated with the more even-handed approach of accepting responsibility equally for both positive and negative outcomes.

Such links are essentially correlational, but they could possibly mean that denial contributes (presumably as a successful defense mechanism) to mental health and high self-esteem. Recent work by Forgas (1994) suggests the opposite causal direction, however. Forgas induced sad and happy moods experimentally, by having people read passages with a strong affective tone, and then he investigated their attributions for relationship conflicts. Sad people blamed themselves more than happy people, who attributed conflict to the situation or to the partner. Apparently happy moods foster denial while sad moods undermine it. An optimal defense mechanism would presumably show the opposite pattern.

Janoff-Bulman (1992) suggested that denial may be especially adaptive following trauma, because it allows the reinterpretation process to proceed piecemeal. After suffering a serious personal trauma such as an accident or victimization, there is often little that the person can do, and so denial does not prevent adaptive responses. Meanwhile, the task of coping with the trauma involves restoring one's positive conceptions of self and world. In Janoff-Bulman's view, one starts by denying the trauma in general, and then the denial drops away piece by piece, allowing the person to begin the task of rebuilding those positive conceptions, as opposed to having to find some new interpretations all at once.

Although we have emphasized the more elaborate forms of denial, such as discrediting sources of criticism, there is some evidence for the more elementary forms as well. Lipp, Kolstoe, James, and Randall (1968) defined perceptual defense operationally in terms of the difference in minimal recognition time for nonthreatening pictures as opposed to threatening ones. The threatening ones in their study were pictures of people who were disabled. Subjects in the study included disabled and nondisabled people. The researchers found that disabled people showed greater perceptual defense: that is, they took relatively longer to recognize tachistoscopically presented slides of disabled people. The authors

interpreted this as evidence of denial. To be sure, it was hardly a successful defense mechanism in this case, because all it accomplished was delaying the recognition by a fraction of second. Still, it suggests that some people do have defenses that work to minimize the recognition of threatening stimuli.

Perceptual denial may be difficult, but memory may be far more amenable to denial. Cray (1966) showed that people protected their self-esteem by not remembering failures. Kuiper and Derry (1982) showed that nondepressed people recalled favorable adjectives pertaining to self better than unfavorable ones. Mischel, Ebbesen, and Zeiss (1976) found that people recalled feedback about their good traits better than feedback about their faults and shortcomings. Whether these effects reflect biased encoding, biased recall, or both is unclear. Baumeister and Cairns (1992) showed that repressors tend to minimize the encoding of bad feedback, but it is plausible that additional biases operate on recall processes. In any case, the memory processes seem quite up to the task of selectively denying disagreeable information.

The heterogeneity of findings on denial suggests that a more differentiated conceptual framework may be useful. Baumeister and Newman (1994) reviewed the ways in which people try to alter and direct their cognitive processes, and in particular they distinguished between regulating the collection of evidence versus regulating the interpretive meaning assigned to the evidence. Most of what we have reviewed here pertains to the latter (interpretation) stage, such as denying the possible implications. More evidence is needed about whether (and how) people prevent disagreeable evidence from entering into the conscious decision process.

Conclusion. The concept of denial encompasses a variety of possible defenses, and it may eventually become desirable on theoretical grounds for the concept to be replaced by several more specific and particular mechanisms. This may be particularly desirable insofar as the various mechanisms are not all equally well documented. Still, for the present, it is fair to say that denial is a genuine and efficacious defense mechanism.

The most stringent definition of denial involves the failure of sensory perception to recognize physical stimuli associated with threat. Restricted to this definition, denial is not a common or successful defense mechanism. There is some evidence of perceptual defense, but it seems

to involve slight delays rather than an effective misperception of threat. It is possible that such processes occur among the mentally ill, but researchers in personality and social psychology have found little evidence of perceptual denial in the normal population.

There is, however, ample evidence of other forms of denial. People dispute or minimize information that threatens their self-esteem, and they reject its implications. They discount bad feedback about their health. They dismiss various risks and dangers and sometimes act as if they were personally invulnerable. They selectively forget material that is disagreeable or esteem-threatening. Some patterns have been linked to high self-esteem, adjustment, and happiness, which is consistent with the view that denial can be an effective defense, although some questions remain about how denial actually operates and whether it actually functions to defend self-esteem.

GENERAL DISCUSSION

Our survey of empirical findings has yielded widely mixed results with regard to the seven defense mechanisms we have surveyed. The mixed nature of the results attests both to the impressive wisdom of Freud's theorizing and to the need to revise his ideas in light of empirical findings.

First, let us consider the broad question of whether normal people have been shown to engage in acts that conform broadly to the hypothesized defense mechanisms. Several of the Freudian ideas fared quite well in our review. Reaction formation is well supported, although the causal process needs further study. Projection is well documented, although some revision of the causal process theory is needed. Undoing, in the sense of counterfactual thinking about recent personal misadventures, is common. Isolation is well supported and probably more common and important than originally assumed. Denial, again in its looser form, is also well documented in multiple patterns, and it too probably involves multiple causal processes.

In contrast, two other defense mechanisms did not yield convincing analogs in the experimental findings of modern researchers. There is only limited and ambiguous evidence for displacement, and if one distinguishes displacement from the crude idea that moods or arousal states can carry over from one situation to the next, there is no proof of displacement per se. And we found nothing resembling sublimation.

Although it would be unwarranted to conclude that displacement and sublimation have been proved to be nonexistent, we find the lack of supportive evidence to be a marked contrast to the other defense mechanisms. We recommend that displacement and sublimation should be regarded as not supported in presently available evidence, and they probably should be dropped from the list of defense mechanisms until and unless clear, positive evidence of them can be found.

A second question is whether the published findings support the conclusion that the given process is a defense mechanism. To qualify, there would have to be some sign that the response helped protect the self against some form of threat, especially a loss of self-esteem. Displacement, even in the loose sense of transfer of excitation or mood, does not appear to accomplish this, and as already noted we found no evidence of sublimation, so those two should probably be crossed off the list of effective defense mechanisms. Undoing—as counterfactual thinking—also seems to fail the test of defending against the implications of bad events, so we suggested reclassifying it as a coping mechanism (as which it may be quite effective and adaptive) rather than as a defense mechanism proper.

Projection is a borderline case. The act of seeing one's traits in other people has not been shown to facilitate defense per se, although it does appear to be a by-product of defensive reactions. The false consensus effect may make one's faults or misdeeds less aversive because they are presumably common. Suppressing thoughts about one's bad traits may make those trait categories highly accessible, but the defense is equally successful regardless of whether another person is available to be seen as having those traits. Thus, it may be most appropriate to regard projection as deriving from a pattern of defensive behavior but not as a defense mechanism per se.

That leaves three defense mechanisms out of our original seven: reaction formation, isolation, and denial. These appear to be the best supported defense mechanisms that normal people have been shown to use to protect their self-concepts against threats. When people are accused of having some objectionable trait, they may defend their self-concepts by displaying the opposite trait (reaction formation), by dismissing their offense as an isolated incident irrelevant to the rest of their identity and self-concept (isolation), or by disputing the evidence and refusing to accept its implications (denial).

Revising Defense Mechanism Theory

The present review has identified several key challenges for the theory of the defense mechanisms. One concerns the extremity of the response. We noted for several defense mechanisms (undoing, denial) that pure, severe forms of the defense had not been documented in the normal population whereas weaker versions were well supported. It is plausible that the extreme forms (e.g., being physically unable to see a person who represents a threat) would occur among the mentally ill.

If so, this would raise an interesting possible response to the question of whether defense mechanisms are adaptive. It may be that several defense mechanisms have both normal and pathological versions. Mild forms of defense may bolster self-esteem, minimize emotional distress, and thus facilitate mental health and adjustment, while stronger forms could have the opposite effect. Mental health would thus be bimodally distributed on several dimensions of defense: People who lack the defense mechanism are vulnerable to threats, and people who overuse it are vulnerable to its destructive side effects, whereas those in the middle may benefit without suffering adverse consequences. The concept of an optimal margin of illusion (Baumeister, 1989; cf. Taylor & Brown, 1988) likewise suggests that optimal adjustment and mental health avoid both excessive realism and excessive distortion.

Another key issue is whether defense mechanisms involve intrapsychic maneuvers or interpersonal, self-presentational strategies. Freud's theories pertained mainly to the former, but many research findings used explicitly interpersonal settings. In our view, it would be justified to speak of defense mechanisms in both cases, because the logic would be similar. For example, donating money to someone of a different race may counter the accusation of racism regardless of whether the origin of that accusation is internal or external. Furthermore, it is well established that there are important links between public self and private self, so that convincing others of one's good traits may be an important step toward convincing oneself (e.g., Baumeister, 1982a, 1986; Haight, 1980; Schlenker, 1980; Tice, 1992; Wicklund & Gollwitzer, 1982). In any case, further work would benefit from attending to evidence of any systematic differences between defense mechanisms that operate at the interpersonal level and those that operate intrapsychically.

Meanwhile, the change from an energy model to a cognitive model as the basic framework for defense mechanism theory appears to be

underway. It is probably no accident that the two least well supported defense mechanisms in our survey (displacement and sublimation) were also the ones most tied to a model based on instinctual energy—while the more cognitive defenses, such as denial, isolation, and projection, fared much better. Clearly, shifting the emphasis from unacceptable impulses to self-esteem threats has implications beyond the nature of the threat: Self-esteem threats are more easily rendered in cognitive terms, while the transformation of unacceptable impulses is inherently more closely tied to energy models. Modern theories about the self tend to be heavily cognitive and not at all energy-based, and defense mechanism theory may have to adjust similarly. Thus, the thrust of our review suggests that defense mechanism theory may need to shift its emphasis from impulse transformation to cognitive and behavioral rejection.

The nature of threat is perhaps the undesirable image of self rather than the impulse itself. The nature of defense is therefore to refute or otherwise reject an undesirable view of self. Such a characterization fits the defenses that fared best in this review (reaction formation, isolation, and denial). It also encompasses other defenses that were not necessarily on Freud's list. It is far beyond the scope of this article to suggest what further defense mechanisms might exist, but while doing this review we did certainly find plenty of evidence of various self-esteem maintenance strategies that did not correspond directly to our list of Freudian defense mechanisms. Future work may make a valuable contribution by listing, taxonomizing, and providing a conceptual framework for all these defenses.

Concluding Remarks

It is impressive to consider how well modern findings in social psychology, mostly obtained in systematic laboratory experiments with well-adjusted American university students, have confirmed the wisdom of Freud's theories, which were mostly based on informal observations of mentally afflicted Europeans nearly a century ago. Not only were several of the defense mechanisms well supported, but in other cases the basic behavioral observations appear to have been sound and only the underlying causal process needs revision.

To be sure, social psychologists have not always given Freud full credit for his insights. Many of the findings covered in this literature review made no reference to defense mechanism theory or to Freud's work. The

phenomena Freud described have in some cases been relabeled or rediscovered under the aegis of social cognition or other current theoretical frameworks. Some of these cases may be attributable to career pressures to come up with novel ideas, but others may reflect the fact that researchers working with new ideas and problems are led back to defensive patterns resembling what Freud discussed. The latter cases suggest the pervasive and fundamental importance of defense mechanisms, insofar as Freudian observations and modern socially psychological experimentation converge in producing evidence for the same phenomena.

Our review has suggested that some specific psychoanalytic concepts of defense should be tentatively discarded and some other views need serious revision. More generally, we have suggested that defense mechanism theory may need to downplay its original focus on impulse transformations and instead focus more directly on how possible images of self are protected and rejected. Regardless of these changes, our review provides a solid endorsement of the fundamental insight that human life in civilized society powerfully motivates people to cultivate a set of cognitive and behavioral strategies in order to defend their preferred views of self against threatening events.

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