

The Role of Persuasive Arguments in Changing Affirmative Action Attitudes and Expressed Behavior in Higher Education

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The research reported in this article examined the conditions under which persuasive arguments are most effective in changing university students' attitudes and expressed behavior with respect to affirmative action (AA). The conceptual framework was a model that integrated the theory of reasoned action and the elaboration likelihood model of persuasion. Studies 1 and 2 established effective manipulations of positive–negative AA information, and peripheral–central routes of processing. Study 3 implemented these techniques, and a path analysis was carried out testing the differential effects of valence of information processed via different routes on AA evaluative beliefs, attitudes, intention, and expressed behavior. Results indicated that positive AA messages processed centrally (i.e., for meaning) resulted in significantly more positive evaluative beliefs. Modifications to the original model resulted in a final model with excellent fit to the data that supported the mediating role of intention in the AA attitude–behavior relationship, as predicted by the theory of reasoned action. The findings highlight potential benefits of interventions for improving support for AA policies, provided that positive information is processed at a central, evaluative level.

Keywords: affirmative action in higher education, theory of reasoned action, elaboration likelihood model, attitude–intention–behavior relationship

For some time now, affirmative action (AA) policy has been integrated into admission procedures of several leading Australian universities. In general, “affirmative action refers to policies and procedures which attempt to increase the representation of an underrepresented, protected group—in education or employment through the consideration in decision making of applicant race, sex, or other protected group status” (Doverspike, Taylor, & Arthur, 2006, p. 3). For the specific purposes of this study, the operational definition focuses on affirmative action involving university admissions policies and procedures that attempt to increase the representation of racial/ethnic minorities in higher education. For example, the University of Sydney offers special admissions programs to assist applicants whose results may fall short of admission indices in gaining admission to the university course of their choice. These programs are not quota driven but may be considered “soft” preferential treatment in that they explicitly target indigenous and educationally disadvantaged students whose qualifications meet a minimum standard (Doverspike et al., 2006).

There has been a surge in research examining AA policies in higher education and the beneficial effects of racial diversity (Allen, Teranishi, Dinwiddie, & Gonzales, 2002; Crosby & Clayton, 2004; Gurin, 2004), including increased interracial interaction (Chang, Astin, & Kim, 2004) and enhanced cognitions, as measured by integrative complexity (Antonio et al., 2004). However,

consequences of AA policies are not always positive. Research by Heilman and Alcott (2001) reported that undergraduate women who were recipients of preferential selection felt stigmatized, experienced negative affect, and reported feelings of incompetence. Moreover, nonrecipients of higher education AA policies have mounted legal challenges on the basis of reverse discrimination (Crosby, Iyer, & Sincharoen, 2006). Notwithstanding this, if soft AA policies are in general regarded as positive and promoting social equity, then it will be beneficial if research can identify the conditions under which persuasive arguments have the strongest effect on support for AA policies.

In order to identify factors that may promote attitudinal and behavioral support for AA policies within a higher education context, the current study tested an integrative model drawing on the strengths of Ajzen and Fishbein's (1980) theory of reasoned action (TRA) and Petty and Cacioppo's (1986) elaboration likelihood model (ELM). Assumptions that AA attitudes predict AA behavior require empirical verification, but despite a growing body of literature focusing on AA attitudes, the incorporation of *actual* AA behavior into research has presented a challenge to researchers in this domain. University students were the focal group in the present study, but in reality they are not in a position to select candidates for admission. For this reason, we assessed *expressed* behavioral support for AA policies using hypothetical scenarios in which special consideration could be given for potential candidates from ethnic minority groups.

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An Integrated Model of Affirmative Action

The TRA highlights processes that lead to attitudinal change; however, the ELM effectively identifies the specific strategies to achieve this and provides formal guidance for choosing arguments

or information to be included in a message to influence beliefs (Eagly & Chaiken, 1993). Previous research has integrated these two models to show that enduring changes in health behaviors—for example, using a safety helmet amongst school-age children—can be brought about by targeting salient health beliefs (Quine, Rutter, & Arnold, 2002). However to our knowledge, the current study represents the first time these two complementary theories have been integrated to study AA attitudes and expressed behavior. The main components of the conceptual framework for this integrated model are depicted in Figure 1, which is adapted from Bell, Harrison, and McLaughlin (2000). The research of these authors tested various hypotheses about attitudes toward AA in employment but did not directly incorporate the ELM framework, nor did it test the model as depicted or the goodness-of-fit of the model. Variables and their interrelationships that are relevant for AA attitudes in higher education are now considered in this model.

Integrated Theoretical Model of Affirmative Action Attitudes and Behaviors

Demographic Characteristics

Demographic variables that may be relevant to AA attitudes and behavior are sex and minority status. Previous research has reported consistent sex and minority status differences in evaluative beliefs concerning AA in the employment context (Bell, Harrison, & McLaughlin, 1997; Bell et al., 2000). Specifically, a recent meta-analysis conducted by Harrison, Kravitz, Mayer, Leslie, and Lev-Arey (2006) found that women and African Americans, who are more likely to benefit from AA policies in an employment context, reported significantly more positive support for these policies than did men and Anglo Americans respectively. According to Ajzen and Fishbein (1980), if demographic variables such as sex and minority status are relevant to the attitudes and behavior being studied, then it is through their effects on evaluative beliefs, one of the determinants of the behavior under investigation. Hence, demographic variables are linked to evaluative beliefs and are included in the integrated model to ensure that effects found for other explanatory variables are not confounded by these demographic characteristics.

Information

Information variables that may be relevant to AA attitudes and expressed behavior are the route of processing of the AA message and the valence of the AA message. The ELM proposes two routes to attitude change: (a) the *central route*, involving careful semantic evaluation of the arguments and (b) the *peripheral route*, involving physical cues provided by, or associated with, the message. When considering attitude change, the elaboration likelihood of the mes-

sage or “the extent to which a person thinks about issue-relevant arguments contained in a message” must be considered (Petty & Cacioppo, 1981, p. 128). When motivation or elaboration likelihood is high, the meaning of the message becomes more important, and central route processing takes place. Peripheral route processing is more likely when motivation or ability to process the message is relatively low, and individuals conserve cognitive effort by relying on simple inferences rather than carefully scrutinizing issue-relevant information. Research has indicated that central route attitude change is more persistent over time and, importantly, a better predictor of behavior than peripheral route attitude change (Ajzen, Brown, & Rosenthal, 1996; Petty & Cacioppo, 1986).

The TRA predicts that valence of information influences beliefs and evaluations. According to Fine (1992), *positive* framing of arguments makes explicit gains and positive outcomes for target minority groups, in addition to long-term gains in equality and socioeconomic status, whereas *negatively* framed statements emphasize the negative consequences of AA policies for nontarget majority groups. Following this rationale, Bell et al. (2000) directly tested the theory of reasoned action to determine whether undergraduate students’ attitudes toward AA programs in employment were malleable in directions that emphasized cultural group differences. After *unfavorable* arguments about AA programs in employment, White Americans’ AA attitudes could be made more negative, and following *favorable* arguments, Black Americans’ AA attitudes could be made more positive. Interestingly however, when White Americans were presented with favorable information and Black Americans were presented with unfavorable AA information, no AA attitude change occurred. It is pertinent to investigate whether these effects generalize to the higher education context in Australia, where AA policies receive considerably less media attention than perhaps is the case in the United States. If beliefs and/or evaluations can be sufficiently altered by manipulations of valence of information, attitude change would be predicted to occur, and intentional and behavioral change should follow (Fishbein & Ajzen, 1981).

Evaluative Beliefs, General Affirmative Action Attitude, Subjective Norm, Intention, and Behavior

The remaining elements of the conceptual model in Figure 1 depict aspects of the TRA. *Evaluative beliefs* (symbolized by $\sum_{i=1}^n b_i e_i$) refer to beliefs (b_i) about what AA is and evaluations (e_i) of the likely consequence of performing AA behaviors. “The strength of each salient belief (b) is combined in a multiplicative fashion with the subjective evaluation (e) of the belief’s attribute, and the resulting products are summed over the n salient beliefs” (Ajzen,

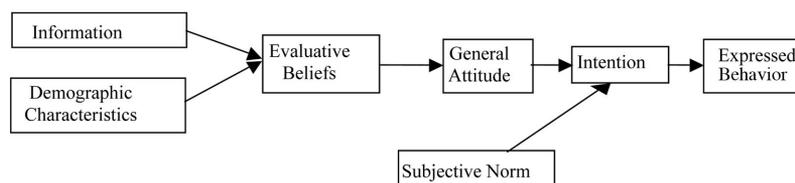


Figure 1. The integrated theoretical model of affirmative action attitudes and behavior.

1991, p. 191). *General attitude* is taken to mean a general feeling of favorableness or unfavorableness toward an object or concept such as AA and is typically assessed by means of an evaluative semantic differential (Ajzen & Fishbein, 1980). General AA attitude is one of two hypothesized predictors with direct links to behavioral intention. *Subjective norm* is the second predictor of intention. Subjective norms refer to a person's beliefs that specific salient referents (i.e., individuals or groups) think they should or should not perform the behavior. In the educational context, this would mean that if a person believes that their parents and friends think they should support AA policies, their subjective norm may exert pressure to perform AA behavior, independently of the individual's general AA attitude. Subjective norm is conceptualized as a multiplicative function of the referent beliefs and the individual's motivation to comply with the specific referents. *Intentions* "capture the motivational factors that influence a behavior; they are indications of how hard people are willing to try, or how much an effort they are willing to exert, in order to perform the behavior" (Ajzen, 1991, p. 181). Intentions are determined by general attitudes and subjective norms. Ajzen and Fishbein (1980) proposed that the best predictor of any behavior is the intention to perform that specific behavior. As noted earlier, expressed AA behavior would be demonstrated if students with positive or favorable attitudes toward AA carried out a course of action that enhanced the educational opportunities of fellow students from underrepresented or disadvantaged minority groups.

Overview of the Studies Conducted

To develop and test measures for the variables and interrelationships depicted in Figure 1, we planned three studies. Consistent with the recommendations of Ajzen (1991) and Ajzen and Fishbein (1980), Study 1 was conducted (a) to elicit salient AA beliefs and referents in a sample representative of the target population and (b) to establish that the positive and negative messages were appropriately perceived as such.

Study 2 was conducted to determine the effectiveness of the ELM's central-peripheral processing manipulation, independently of attitude change, by considering the number of evaluative thoughts during message processing in the different conditions. Such a thought-listing technique to assess level of elaboration has been widely used in the past in ELM research, for example, by Burnkrant and Howard (1984) and Petty, Cacioppo, and Heesacker (1981). Analysis of thought-listing tasks provides an indication of the amount of issue-relevant elaboration taking place (Brannon & Brock, 2001; Ernst & Heesacker 1993; Harkins & Petty, 1981).

Using the information gathered in these two studies, Study 3 implemented the central versus peripheral information-processing manipulation in order to determine the differential effects of valence of information processed via different routes on AA evaluative beliefs, attitudes, intention, and expressed behavior. In so doing, Study 3 provides an overall test of the goodness of fit of the integrated model shown in Figure 1.

Study 1: Eliciting Salient Beliefs and Referents, Establishing Valence of Information, and Ensuring Baseline Levels of Affirmative Action Knowledge

There were two aims to Study 1. The first aim was to generate salient beliefs about AA in university admissions in a sample that

is representative of the target population. Ajzen and Fishbein (1980) proposed that attitudes can be predicted from evaluative beliefs: beliefs (b_i) that a given behavior will lead to certain consequences (i) and evaluation of these consequences (e_i). Elicitation of salient beliefs involves participants responding to open-ended questions about the advantages and disadvantages of AA.

The second aim was the formulation, and testing for perceptions of valence, of positive and negative statements about the value of AA. We developed two arguments outlining aspects of AA, one positive and one negative. The messages paralleled those used in Bell et al. (2000), being two-sided in that they began with a brief acknowledgment of the opposing argument followed by a more extended presentation of the intended message. For example, the positive message started with an acknowledgment that there may be disadvantages to AA, but then continued with an extended presentation of advantages of AA.

Prior to testing these aims, it was deemed necessary to establish baseline levels of AA knowledge by presenting nonevaluative information about AA in a multiple-choice quiz. Research testing the ELM has found that prior knowledge affects elaboration ability: With more knowledge, the ability to evaluate and scrutinize arguments is greater (O'Keefe, 1990). However, most people are relatively uninformed about AA (Doverspike et al., 2006), and the extent to which knowledge (or lack of it) may affect results is unknown. Establishing a baseline level of information was considered particularly important in the present context, where AA policies are less frequently publicized and therefore less defined than in the United States. To avoid the potential problems of low levels of AA knowledge, we developed a 10-item multiple-choice quiz. An important feature of the quiz was the provision of feedback on the correct alternative following the completion of each item. Feedback addressed a problem identified by Kravitz and Platania (1993), who found that undergraduate students' initial opposition to AA policies occurred when an unclear understanding of AA existed. For the purposes of the current research, it was considered important that participants have some baseline level of accurate AA knowledge.

Method

Participants and Design

Thirty-nine native English speakers, 30 (77%) women and 9 (23%) men, who were enrolled in an introductory psychology course at the University of Sydney, participated for course credit. Mean age was 19.21 years ($SD = 2.55$).

Measures and Materials

Affirmative action knowledge quiz. The AA quiz consisted of 10 multiple-choice items assessing participants' existing knowledge about AA. An example item is, "In an educational context affirmative action policies: (a) mean that all Aboriginal or Torres Strait Islander applicants will be admitted; (b) may utilize different selection criteria for individuals belonging to certain groups; (c) mean that equivalent numbers of males and females will be admitted; (d) none of the above." The quiz was presented on computer (see Appendix).

Salient beliefs and referents. To allow for the possibility that participants might have been relatively unfamiliar with AA, ref-

erents that influence participants' stance on political and social issues more generally, rather than on AA in particular, were elicited. Participants responded to open-ended questions about the advantages and disadvantages of AA (salient beliefs) and people who are influential for them with regard to social and political issues (salient referents). The questions were based on Ajzen and Fishbein's (1980) recommendations, for example:

Salient beliefs: "What are the advantages of taking active measures to increase the representation of students from minority groups at universities?"

Salient referents: "Are there any groups or people who influence your political views or the stance you take on political and social issues?"

Valence of affirmative action messages. The positive message was as follows:

While affirmative action has been shown to have some disadvantages, it has been argued that affirmative action policies are effective in redressing past discrimination and do lead to improved socioeconomic situations for target groups. It has also been argued that discrimination continues today, and as a result social policies such as affirmative action are still very relevant and necessary.

The negative message was the following:

While affirmative action has been shown to have some advantages, it has been argued that its effectiveness in addressing discrimination has not been clearly demonstrated and thus does not necessarily lead to improved socioeconomic situations for target groups. It has also been argued that affirmative action may be unfair for nontarget groups and most importantly, that AA is no longer needed.

Procedure

After completing the AA quiz, participants listed salient beliefs and referents and were then presented with both the positive and negative AA messages in a counterbalanced fashion. Participants rated the messages on a 7-point scale ranging from very negative (-3) to very positive (+3). The rating was obtained to establish that the messages conveyed the intended attitude toward AA.

Results and Discussion

Overall scores on the AA quiz ranged from 2 through 9 out of 10 ($M = 6.50$, $SD = 1.71$), indicating a wide range of AA knowledge. Beliefs most commonly listed by participants are shown in Table 1. The five advantages most frequently cited accounted for 88% of all advantages elicited, and the five most frequently mentioned disadvantages accounted for 86% of all disadvantages elicited. These were considered salient AA beliefs for this population and were retained for use in Study 3.

The five most frequently mentioned referents influential in participants' social and political views were parents (17), friends (12), political parties/leaders (8), media (8), and university/teachers (7). These five referents accounted for 81% of those listed and were included in Study 3. The salient beliefs and referents elicited are similar to those found in two studies by Bell et al. (2000) and Kravitz and Platania (1993).

The mean rating of the positive message was $M = 1.58$ ($SD = 1.10$), and the mean rating of the negative message was $M =$

Table 1
Citation Frequencies for Salient Advantages and Disadvantages of Affirmative Action in Education

Feature of affirmative action	Frequency
Advantages	
Increases opportunities for target groups	26
Leads to greater equality between groups	20
Increases diversity at university	17
Improves future opportunities, long-term benefits for minorities	15
Decreases discrimination and prejudice	12
Disadvantages	
Discriminates against nontarget groups	28
May cause anger in nontargets, thus increasing conflict/discrimination	18
Leads to a negative perception of minority groups	9
Uses resources on people who are not committed	7
It is not merit based	4

Note. $N = 39$.

-1.12 ($SD = 1.10$); this difference was statistically significant, $M = 2.71$, $SD = 1.85$, $d = 1.46$, paired $t(38) = 9.16$, $p < .001$. Thus, the manipulation of valence of information is successful and can be utilized in testing the overall model in Study 3. To test the ELM aspect of Figure 1, we sought an effective manipulation of route of processing.

Study 2: Manipulation of Route of Processing

The levels-of-processing approach in cognitive psychology provided a useful framework for developing an appropriate processing manipulation. According to the levels of processing approach, depth or elaboration of processing increases as attention moves from surface features to semantic analysis. Deeper levels of processing are associated with "more elaborate, longer lasting, and stronger [memory] traces" (Craik & Lockhart, 1972, p. 675; see also Bradshaw & Anderson, 1982). Levels-of-processing manipulations vary the extent to which meaning must be extracted from information in order to perform a task. The cognitive elaboration required by semantic processing of the levels-of-processing framework is conceptually equivalent to central route processing, and the processing of surface features is conceptually equivalent to peripheral route processing of the ELM.

On the basis of the levels-of-processing approach, a proofreading task was developed to encourage lower level processing in the peripheral condition, and a semantic rating task was developed to encourage deeper level processing in the central condition. Proofreading persuasive messages for spelling and grammatical errors forces participants to analyze the information on a visual/physical level, thus decreasing the likelihood that they will reach the stage of semantic analysis or elaboration of arguments. In contrast, participants who read the messages and rate the extent to which they agree or disagree with them should process at a deeper, more elaborative level. Previous research provides support for the idea that proofreading and semantic rating tasks encourage different levels of processing. Memory for words is more accurate when the words are processed for meaning or personal reference rather than for physical properties (Craik & Tulving, 1975; Rogers, Kuiper, & Kirker, 1977).

It is unusual in persuasion studies for researchers to investigate the effectiveness of their manipulations independently of attitude change. For example, Ajzen et al. (1996) assessed processing routes indirectly, assuming that because the quality of the argument was significantly more important in a personally relevant condition, participants in that condition engaged in more evaluative thinking or deeper message processing than those in a low personal relevance condition. A more direct method for establishing successful manipulation of central and peripheral processing is the use of the thought-listing technique described earlier (Burnkrant & Howard, 1984).

The aim of Study 2 was to test the effectiveness of the central-peripheral processing manipulation. We hypothesized that with central (semantic) processing, more evaluative AA thoughts would be generated than with peripheral (proofreading) processing.

Method

Participants and Design

Participants included 50 native English speakers (27 women and 23 men), who had not participated in Study 1 and were introductory psychology students at the University of Sydney, Australia. The participants, whose mean age was 19.30 years ($SD = 3.34$), were randomly assigned to central ($n = 29$) or peripheral ($n = 21$) processing groups.

Procedure and Materials

The AA quiz was included in this study to establish baseline levels of knowledge about AA. Following this, the processing manipulation was implemented. Participants in the central processing group read both the positive and negative messages about AA and rated, on a 7-point scale, the extent to which they agreed or disagreed with the arguments. Personal relevance was introduced to facilitate self-reference; the issue was made personally relevant by suggesting that the AA policies may be implemented at the University of Sydney in the following academic year, and participants were told they would be required to answer questions about the messages. Therefore, for the central processing condition, semantic processing of the messages was encouraged by informing participants that ratings of agreement with, and questions about the content of, the messages would be required after the initial reading.

For the peripheral processing condition, a proofreading, or error detection, task was introduced, requiring a lower level of processing of the messages. Errors were inserted into the original positive and negative messages on the basis of the types of errors used in the proofreading literature: contextual errors, involving "faulty grammar or incorrect word usage" (Jones, Miles, & Page, 1990, p. 90), and errors in spelling, meaning, and punctuation/grammar (Hacker, Plumb, Butterfield, Quathamer, & Heineken, 1994). With a variety of conceptually different types of errors, participants must remain focused on physical aspects of the message and pay relatively less attention to the semantic content of the message. That is, the proofreading task would be a distraction from the persuasive message, and this has implications for elaboration: "Distraction disrupts the thoughts that would normally be elicited by a message" (Petty & Cacioppo, 1986, p. 141).

In the peripheral condition, the messages presented were identical to those in the central group, but contained 12 errors, which participants were required to find and circle. For example, "While affirmative action has been shown to have some advantages, it has been argued that its effectiveness in addressing discrimination has not been clearly demonstrated." The instructions given were based on those used by T. Singh and Dwivedi (1993) and are similar to those used by Levy (1983), who requested that participants read for understanding. Participants were instructed as follows:

The following passages outline some aspects of affirmative action in education but contain 12 errors, in either spelling or grammar. Please read the passages quickly, carefully and with understanding. When you come across an error, circle it. Take care that all errors are circled.

The proofreading task (peripheral) and the self-relevant rating task (central) each took approximately 1 min to complete, thus controlling for exposure duration across the two groups.

Finally, participants completed a thought-listing task, required to assess elaborative thinking. Following the procedure used by Petty et al. (1981), participants were allowed 2.5 min to list the thoughts they had while reading and rating the AA messages. On completion of all measures, participants were debriefed about the true nature of the study.

Results and Discussion

Performance on the AA knowledge quiz was comparable to performance by participants in Study 1, with a similar range of values ($M = 6.61$, $SD = 1.45$, range = 3–9, $N = 50$).

Two independent judges assessed the thought-listing exercise, tallying the number of listed thoughts containing an evaluation of AA. There was a high level of absolute agreement between raters, with the intraclass correlation coefficient being .97 ($p < .001$). Averaged across the two judges, significantly more evaluative AA thoughts were listed in the central processing condition ($M = 2.72$, $SD = 1.25$) than in the peripheral condition ($M = 1.81$, $SD = 1.71$), providing evidence that the manipulation was effective in inducing different degrees of elaborative processing, $F(1, 48) = 4.79$, $p < .05$, $d = 0.63$.

Study 2 confirmed the effectiveness of the manipulation of elaborative or evaluative processing. The semantic analysis required in the central processing group encouraged participants to think about the issue of AA and to evaluate its merits as a social policy. The proofreading task appears to have limited the ability of those in the peripheral processing group to evaluate the messages or elaborate on the issue of AA. Thus the central-peripheral processing manipulation was effective, and the methods needed to carry out the experimental test of the integrated model were in place.

Study 3: Testing the Integrated Model of Affirmative Action Attitudes and Behavior

The test of the overall model began with the integrated theoretical framework depicted in Figure 1 and was unique in comparison with previous AA research in four important ways: (a) It integrated key elements of the TRA with the ELM's precision concerning the processing of persuasive information and subsequent attitude and behavior change; (b) it applied the integrated model in a tertiary

education context; (c) it investigated AA attitudes in Australia; and (d) by carrying out path analyses, it presented a more stringent test of goodness of fit of the model to the attitudinal and behavioral data.

Direct Predictors of Affirmative Action Evaluative Beliefs and General Attitude

Despite there being less blatantly prejudiced attitudes against women and ethnic minorities in employment or in education in recent times, the fact that AA policies remain in place suggests an attempt to address continued disadvantage. As previously discussed, extensive research about AA in employment justifies the inclusion of sex and minority status as potentially relevant demographic variables in accounting for variability in evaluative beliefs in the educational context. These variables were thus included in the model, in accordance with Ajzen and Fishbein (1980), linked with direct paths to evaluative beliefs.

Hypothesis 1. Female and minority group individuals will be more positive in their evaluations of AA policies in education than male and majority group individuals, respectively.

The integrated model proposed that, if effective in influencing AA attitudes and ultimately behavior, manipulations of valence of information and route of processing, should be reflected initially in differences in evaluative beliefs. Therefore, one aim of the experimental intervention was to expose individuals to differing information about the value of AA and to assess the extent of this influence on subsequent AA evaluative beliefs and their effects on attitudes, intentions, and behaviors. Information valence was systematically varied by presenting the positive or negative messages developed in Study 1. Central or peripheral processing of this information was manipulated in terms of the semantic versus proofreading tasks developed in Study 2, in order to compare the effectiveness of persuasive communications via two different routes. In addition to the four information conditions implied by the factorial crossing of these two variables, a control condition was included to permit investigation of direction of changes in evaluative beliefs with positive or negative information. Four orthogonal planned contrasts pertaining to the effects of these five information conditions on evaluative beliefs were formulated. These corresponded to the tests of main effects of route of processing and valence of information, an effect of interaction of route of processing and valence of information, and a test of the control conditions versus the information conditions, thus forming four variables entered into the Figure 1 conceptual model under the umbrella term "information."

In order to assess evaluative beliefs according to the TRA, we drew on the salient beliefs collected in Study 1 to develop a set of questions requiring ratings of beliefs about AA-related outcomes and evaluations of the objects of the beliefs.

Hypothesis 2. Central rather than peripheral processing will enhance the effects of information valence on evaluative beliefs.

Attitudes are considered to be a function of evaluative beliefs. Within the framework of the model depicted in Figure 1, the only direct influence on general AA attitude is evaluative beliefs. It is

assumed that if external variables, such as demographics and information, have any effect on general attitude, that effect is mediated by evaluative beliefs.

Hypothesis 3. More positive evaluative beliefs will be associated with more positive general attitudes toward AA in education.

Independent Predictors of Intention: General Affirmative Action Attitude and Subjective Norm

In accordance with the model in Figure 1, general AA attitude and subjective norm are represented with direct effects on behavioral intention. The relationship between subjective norm and general attitude is not clearly specified by Ajzen and Fishbein. In the 1980 model, these aspects were depicted as independent in the sense that there were no direct links between them. However, the independence of the attitudinal and normative sources of influence on intention has been questioned by various authors and is not a necessary aspect of the model (Ajzen, 1991; Miniard & Cohen, 1981; Vallerand, Deshaies, Cuerrier, Pelletier, & Mongeau, 1992). An advantage of a path analysis representation of the model is that it requires overt specification of links between components, and the theoretical and empirical meaning of such linkages can be investigated. However, the integrated model is initially tested as depicted in Figure 1, with subjective norm and general AA attitude linked only to intention, with no relationship between them.

Hypothesis 4. General AA attitudes and subjective norm independently and directly contribute to variability in intention to perform AA behavior.

Relationship Between Intention and Expressed Affirmative Action Behavior

According to Ajzen and Fishbein (1980), "To predict a behavioral criterion from intention, it is essential to ensure that the measure of intention corresponds to the measure of behavior" (p. 42). When using a single-action criterion, it is preferable to obtain an indication of the likelihood that the person will engage in the behavior; to this end, a respondent might be asked to indicate the subjective probability that he or she will support AA policies.

Singer's (1992) investigation of the perceived justice of preferential selection served as a basis for developing a measure of AA behavior. In that study, participants rated the fairness of selection decisions involving pairs of candidates differing in formal qualifications and minority status. In the present study, participants selected candidates for entry to an introductory psychology course. Unlike previous research in AA and antinuclear attitude research that relies on attitudinal behaviors such as signing a petition (see, for example, Ajzen et al., 1996; Fox-Cardamone et al., 2000), the AA implementation task developed here can be regarded as an expressed behavioral measure of AA.

If there is validity in the concept of intention, then individuals who indicate a higher subjective likelihood of engaging in AA behavior should be more likely to demonstrate support for AA policies by giving special consideration to minority candidates.

Hypothesis 5. Intention to perform AA behavior predicts that behavior.

Implicit in Figure 1 and Hypothesis 5 is a further hypothesis that the effect of general attitude on AA behavior is mediated by intention. This mediation hypothesis is central to Ajzen and Fishbein's (1980) theory, and we examine its tenability.

Method

Design

The experimental design consisted of the five information conditions. Essentially, these can be regarded as equivalent to a 2 (negative vs. positive information) \times 2 (central vs. peripheral processing) between-subjects design, with the additional inclusion of a control group. The control group received no persuasive message and was included to allow baseline comparisons of the attitude change manipulations.

Participants

One hundred and eighty-four native English-speaking, introductory psychology students at the University of Sydney who had not participated in Studies 1 and 2 participated for course credit. Thirty-one participants failed to complete the task (see Results section) and were removed from analyses. Of the remaining 153 participants, 113 were female and 40 were male, with a mean age of 19.7 years ($SD = 4.6$). With regard to minority status, 127 participants were classified as majority (Anglo/European) and 26 as minority (predominantly Asian or Middle Eastern). Participants were randomly assigned to experimental conditions.

Measures and Materials

Demographics. Demographic information on age, sex, and ethnicity was collected.

Affirmative action quiz. The AA quiz was included to establish baseline levels of AA knowledge and to enable testing for group differences in knowledge that might otherwise account for the results.

TRA questionnaire. The TRA questionnaire was developed, consisting of items relating to the following concepts:

1. **Salient beliefs about AA in university admissions** (five advantages and five disadvantages) identified in Study 1. Participants indicated the likelihood that each advantage or disadvantage would be a consequence of AA (b_i) and evaluated each consequence (e_i). The likelihood and evaluation ratings were completed on 7-point rating scales. There is no a priori rationale for scoring of these ratings, whether using unipolar or bipolar scales or a combination of the two (Ajzen, 1991). In the present study, in order to facilitate interpretation of products of these ratings, we scored beliefs and evaluations in a unipolar fashion, on a 7-point scale ranging from 1 (*unlikely*) to 7 (*likely*) for beliefs and from 1 (*extremely bad*) to 7 (*extremely good*) for evaluations. Negatively worded items were appropriately reverse scored. The resulting information was used to compute the evaluative beliefs score ($\sum_{i=1}^n b_i e_i$). A high score on this measure can then be unambiguously interpreted as supportive of AA policies (Cronbach's $\alpha = .80$).

According to Ajzen and Fishbein (1980), the multiplicative composites of beliefs and evaluations, that is, the evaluative be-

liefs, are hypothesized to predict general attitudes (Morrison et al., 2002). Sometimes researchers in this area consider the sum of the belief (Σb) and evaluation (Σe) scores in addition to the Σbe as predictors of attitude. In the present study, the method of scoring the responses precluded a meaningful analysis in this sense, as the Σbe values are necessarily highly correlated with the belief and evaluation totals.

2. **General AA attitude.** Three semantic-differential items directly assessed AA attitude toward increasing the representation of ethnic minority groups in university courses. The dimensions rated were harmful–helpful, negative–positive, and necessary–unnecessary (reverse scored). Scores on the three items were summed to calculate general AA attitude (Cronbach's $\alpha = .87$).

3. **Intention.** Following Brubaker and Fowler (1990); McClenney and Neiss (1989); Netemeyer and Burton (1990); and K. Singh, Leong, Tan, and Wong (1995), we used a single-action criterion to assess, on a 7-point scale ranging from -3 (*unlikely*) to $+3$ (*likely*), how likely it was that participants would support AA policies in university admission: "I am _____ to support policies that seek to increase the representation of ethnic minorities in university courses, even if it means making special considerations for these people."

4. **Subjective norm.** From a list of five potential referents, participants indicated what their most influential referent would like their position toward AA to be, on a 7-point scale ranging from -3 (*not support*) to $+3$ (*support*), and how motivated they were to comply with this person's wishes, on a 4-point scale ranging from 0 (*not at all*) to 3 (*very much*). Subjective norm was then calculated by computing Referent Position \times Motivation to Comply.

5. **Expressed behavioral measure.** Adapting Singer's (1992) selection methodology, we presented participants with an introductory statement followed by four scenarios involving pairs of candidates, differing in ethnic background and qualifying marks, who were competing for course entry. Both candidates had marks below the cutoff for the course, but the claim was made that they were capable of completing the course. In no scenario did the minority candidate score higher than the European candidate, so that selection of the minority candidate would not reflect simple merit-based consideration. Participants indicated whether they would admit one of the two candidates, neither candidate, or both candidates into an introductory psychology course. Responses were scored so that higher scores indicated soft preferential treatment for ethnic minority candidates: 2 points for selection of the ethnic minority candidate, 1 for selection of both candidates, 0 for selection of the candidate of European origin or neither candidate. AA expressed behavior scores were summed over the four items.

Procedure

Phase 1. Participants completed the demographic questionnaire and the AA knowledge quiz.

Phase 2 (experimental manipulation). Participants were randomly assigned to one of five groups: central processing/positive message, central processing/negative message, peripheral processing/positive message, peripheral processing/negative message, and a control condition in which participants received no AA message. To ensure that participants carried out the task, we instructed those in the central condition to rate level of agreement with the mes-

sage, and those in the peripheral condition to mark grammatical/spelling errors contained in the message.

Phase 3 (TRA questionnaire). The questionnaire contained 20 AA questions assessing beliefs and evaluations; in addition to this, 3 questions assessed general AA attitude. A further 3 items were relevant to subjective norm and intention to support AA policies in educational contexts. Four different random orders of belief, evaluation, and general attitude items were generated.

Phase 4. Participants were given the opportunity to implement AA using the AA behavioral measure and were thoroughly debriefed following completion of data collection.

Results and Discussion

Rationale and Overview of Statistical Analysis

Prior to conducting the test of the overall model in a path analysis, we carried out preliminary analyses to investigate any differences in AA knowledge and the effects of the experimental manipulation of information. Path analysis with AMOS 7.0 (Arbuckle, 2006) was then carried out to test the conceptual model as depicted in Figure 1. This is the most restrictive model in the sense that the only paths enabled are those directly implied by the theoretical formulation. Grounds for relaxing the restrictions were to investigate whether the hypothesized mediating effects are tenable: Information may affect general attitude directly as well as indirectly through evaluative beliefs, and attitudes may affect behavior directly rather than indirectly through intentions. In addition, as discussed above, there is evidence to suggest that subjective norms may affect not only intentions but also beliefs and attitudes (Miniard & Cohen, 1981; Vallerand, Deshaies, Cuerrier, Pelletier, & Mongeau, 1992). Similarly, there has been an extensive amount of socialization research to show that parents as referents continue to influence adolescents' attitudes (White & Gleitzman, 2006; White & Matawie, 2004).

Preliminary Analyses

Protocols for participants in the central and peripheral conditions who had not carried out the task appropriately were discarded. If participants had not followed instructions, by failing either to rate agreement with the arguments of the message or to indicate grammatical/spelling errors, there were no grounds for assuming they had read the message. Additionally, participants who did not answer all questions were excluded. Those excluded from further analysis did not differ significantly from those included in terms of age, sex, or ethnicity. Data available for analysis, by groups, were as follows: positive/central, $n = 23$; positive/peripheral, $n = 32$; negative/central, $n = 27$; negative/peripheral, $n = 35$; and control, $n = 36$.

Mean scores on the AA knowledge quiz were computed across groups. Random allocation to conditions was successful in equalizing scores on this potential nuisance variable, as group means were between 6.41 and 6.67, and there was no evidence of differences between groups, $F(4, 148) = 0.17, p > .05, \eta^2 = .003$.

Effects of Valence of Information and Route of Processing on Evaluative Beliefs

Mean evaluative belief scores across information groups are reported in Table 2. We expected that the favorability of informa-

Table 2
Means and Standard Deviations of Evaluative Beliefs Across Experimental Conditions

Evaluative affirmative action beliefs	Valence of affirmative action information				
	Positive		Negative		Control
	Central	Peripheral	Central	Peripheral	
<i>M</i>	307.15 _a	268.20 _{b,c}	256.95 _c	291.70 _{a,b}	265.41 _{b,c}
<i>SD</i>	63.82	67.18	52.58	74.55	73.35

Note. Central and peripheral refer to the route of processing. Means with the same subscript do not differ significantly at the $p < .05$ level according to the Fisher least significant difference test. Sex and minority status were not controlled for in these unadjusted means. Levene's test indicated no violation of the homogeneity of variance assumption, $F(4, 148) = 0.62, p > .05$.

tion presented would have a positive effect on AA evaluative beliefs and that this effect would be more marked when the information was processed centrally rather than peripherally. Analysis of variance indicated significant differences between groups in evaluative beliefs, $F(4, 148) = 2.54, p < .05, \eta^2 = .06$. Analysis of contrasts comparing positive with negative information (averaged over route of processing, with coefficients .5, .5, -.5, -.5, 0 respectively for positive/central, positive/peripheral, negative/central, negative/peripheral, and control conditions), central to peripheral processing (averaged over valence of information, with coefficients .5, -.5, .5, -.5, 0), and the interaction of information valence and processing route (coefficients .5, -.5, -.5, .5, 0) were conducted with evaluative belief scores as the dependent variable. Effect size for the contrasts are reported in terms of r^2_{alerting} , which reports proportion of between-groups variability accounted for (Rosnow, Rosenthal, & Rubin, 2000). Only the interaction contrast was statistically significant, accounting for 83% of the between-groups variability, $r^2_{\text{alerting}} = .83, F(1, 148) = 8.44, p < .01$. The interaction between route of processing and valence of information can be seen in Figure 2, where the differential effects of positive and negative information were in the predicted direction only with central processing, providing evidence for the effectiveness of the experimental manipulations.

Further investigation was conducted with the Fisher least significant difference procedure for pairwise comparisons, as shown in Table 2. The aim here was to clarify the interaction effect and compare evaluative beliefs in the control condition with those in the information conditions. When comparing central to peripheral processing conditions, we found that evaluative beliefs were significantly more supportive of AA after positive information, and significantly less supportive after negative information. Furthermore, the mean level of support for AA in the positive/central condition was significantly higher than that in the negative/central condition and that in the control condition. Within the peripheral processing condition, there was no significant difference in evaluative beliefs between the positive and negative message conditions.

In summary, the experimental manipulations were effective in demonstrating that evaluative beliefs can be changed systematically as a function of the valence of information presented and the route of processing, supporting the information aspects of Hypothesis 2.

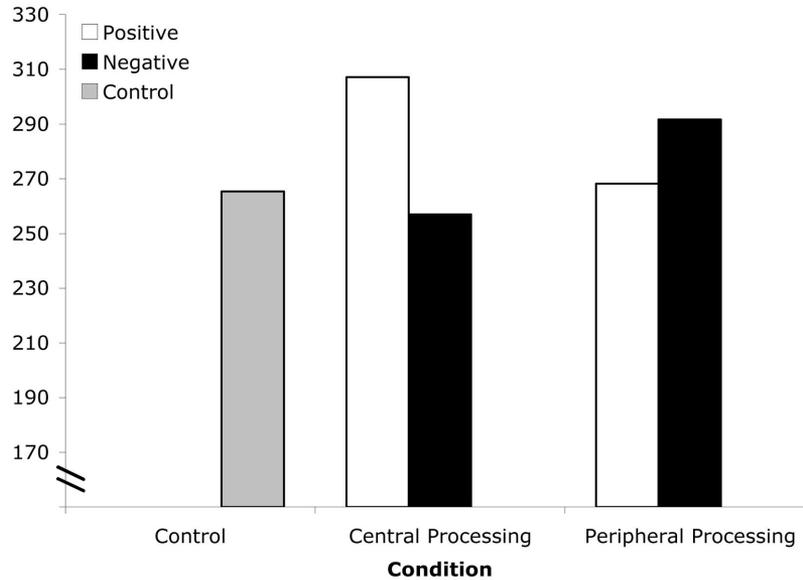


Figure 2. Mean evaluative belief scores as a function of route of processing and valence of information.

The Integrated Theoretical Model: Correlations

Relationships between the variables in the integrated model are reported in Table 3. There were strong positive correlations between evaluative beliefs, general AA attitude, subjective norm, and intention. Furthermore, there were statistically significant positive relationships between beliefs, attitude, subjective norm, intention, and expressed behavior.

The Integrated Theoretical Model: Path Analyses

To test the adequacy of the integrated model in following through effects of demographic variables and information on AA attitude, intention, and behavior, we carried out a path analysis beginning with the original model, as proposed in Figure 1, using AMOS 7.0 (Arbuckle, 2006). The experimental manipulations were included as a set of four orthogonally coded contrasts fol-

lowing the method of Aiken, West, and Pitts (2003); the coefficients were constructed in such a way that the regression coefficients were immediately interpretable as the relevant effects. The contrasts tested the main effect of valence, or positive versus negative information (.5, .5, -.5, -.5, 0); the main effect of route of processing, or central versus peripheral processing (.5, -.5, .5, -.5, 0); the interaction of information valence and processing route (.25, -.25, -.25, .25, 0); and information conditions versus control (.2, .2, .2, .2, -.8).

Demographic variables were sex and minority status; the demographic and information variables were assumed to have direct links only to evaluative beliefs. For ease of representation, covariances between sex, minority status, and subjective norm are not shown in Figures 1 or 3, although they were free to vary in estimating the model (but were not statistically significant). Given random allocation to information conditions and orthogonal con-

Table 3
Bivariate Correlations Between Variables in the Integrated Model

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Sex	—	.13	-.02	.11	.08	.20*	.08	.14	.10	.09	-.03
2. Minority		—	.06	.06	-.003	-.09	-.12	-.09	-.07	-.13	.02
3. Valence of information			—	-.02	-.15	-.03	.05	.16*	-.04	.11	.04
4. Route of processing				—	-.06	-.07	-.01	-.01	-.04	-.09	-.02
5. Valence × Route					—	-.004	.22*	.04	.09	.06	.09
6. Information versus control						—	.09	.11	-.04	.02	-.08
7. Evaluative beliefs							—	.62*	.49*	.62*	.18*
8. General attitude								—	.51*	.76*	.28*
9. Subjective norm									—	.62*	.20*
10. Intention										—	.31*
11. Expressed behavior											—
<i>M</i>							276.79	2.23	1.73	0.77	1.82
<i>SD</i>							69.08	3.94	3.06	1.61	1.04

**p* < .05.

Table 4
Summary of Goodness-of-Fit Indices

Index	Integrated theoretical model (Figure 1)	Final revised model (Figure 4)
χ^2	102.79	37.99
df	42	36
χ^2 difference	—	64.80*
CFI	.80	.99
RMSEA	.10	.02
90% CI for RMSEA	.07–.12	.00–.06
Evaluative beliefs R^2	.08	.30
General attitude R^2	.38	.48
Intention R^2	.58	.66
Expressed behavior R^2	.08	.10

Note. CFI = comparative fit index; RMSEA = root mean square error of approximation; CI = confidence interval.

* $p < .05$ indicates significant difference between consecutive model chi-square values.

trasts, covariances between the information conditions and other exogenous variables were set to zero. Chi-square and degrees of freedom are reported together with goodness-of-fit indices: root mean square error of approximation (RMSEA) with the associated 90% confidence interval, and comparative fit index (CFI). Proportion of variance accounted for in each of the endogenous variables is also reported. Rules of thumb for acceptable fit for RMSEA are that values less than .05 indicate good fit; for CFI, values greater than .90 indicate “reasonably good fit of the researcher’s model” overall (Kline, 2005, p. 140). Change in model fit was assessed with the chi-square difference statistic (χ^2_D). Summary information on the models is presented in Table 4.

The interaction of information valence and processing route in their effects on evaluative beliefs, as reported above, was maintained when controlling for sex and minority status. Contrary to Hypothesis 1, the evaluative belief scores of minority group members ($M = 294.6, SD = 61.4$) and women ($M = 279.9, SD = 66.6$) were not significantly higher than those for members of majority

groups ($M = 273.1, SD = 70.2$) or men ($M = 268.1, SD = 76.0$), respectively. The lack of statistical significance of these results was surprising given the previous findings of Bell et al. (2000), who reported reliable effects of both minority status and sex across several studies. This difference may be due to the differing contexts of employment and university selection, cultural differences between Australia and the United States, or the fact that our sample consisted solely of introductory-level university students, whereas Bell et al.’s sample was more diverse. However, as noted by Bell et al., the use of tertiary students is not a serious threat to the external validity of AA studies and, particularly in the context of the present study examining AA within a tertiary education context, tertiary students are the population of interest.

The elements of the TRA model relating evaluative beliefs to attitudes, intention, and behavior were all statistically significant, as was the link from subjective norm to intention, supporting Hypotheses 3, 4, and 5. However, despite the apparent support for the theoretical predictions, the model was not a satisfactory fit to the data ($CFI = .80, RMSEA = .10$) and did not adequately capture the pattern of observed correlations between variables. As a consequence, we made modifications to the model.

Modifications: The Revised Integrated Model

Three areas of model modification were introduced. The first concerned the link between information and general AA attitude. Up to this point, information manipulation has had a direct effect only on evaluative beliefs, with any further effect on general attitude mediated by evaluative beliefs. However, the positive or negative aspects of information about AA may directly affect general attitudes toward such policies. Paths from the contrasts specifying the effects of valence and route of processing of information were added to allow for direct effects on general AA attitude in addition to those on evaluative beliefs, thus testing what is, in effect, an implied mediation hypothesis (see Figure 3).

The second area of modification concerned subjective norm. The normative and attitudinal influences on intention are essentially independent in the theoretical model (Figure 1); however, as

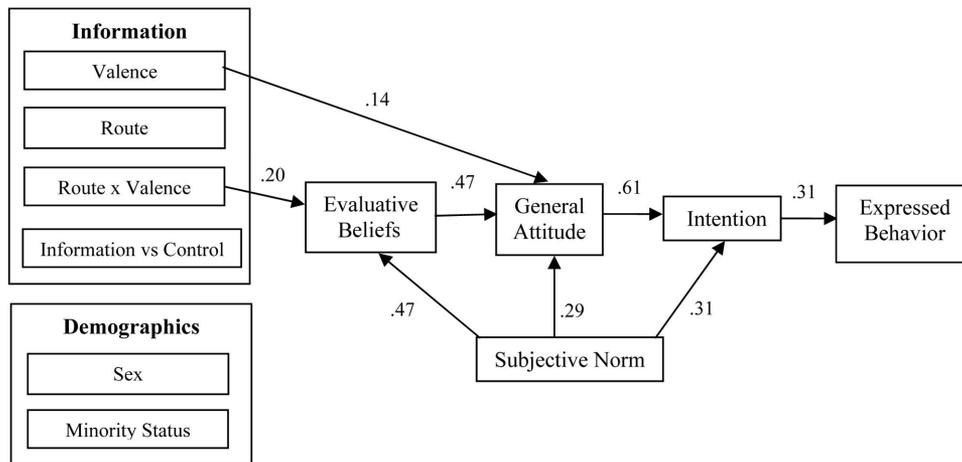


Figure 3. The final integrated model of affirmative action attitudes and expressed behavior showing standardized values for statistically significant paths.

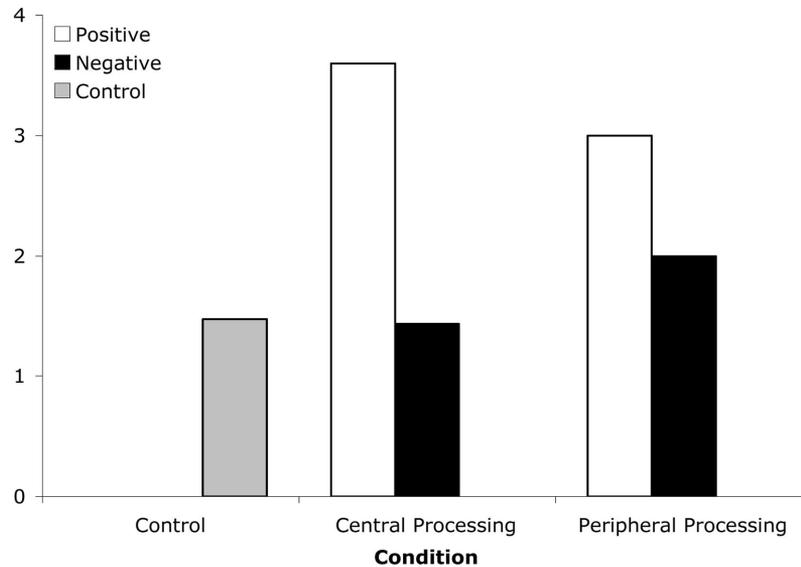


Figure 4. Mean general affirmative action attitude scores as a function of route of processing and valence of information.

noted above, the independence of these components has been questioned by various authors. It is not clear why subjective norm might be expected to directly predict intention, as in Hypothesis 4, but not evaluative beliefs or general AA attitude. Vallerand et al. (1992), for example, found that the TRA showed improved fit to the data when such a path was estimated in an analysis of moral behavior. The beliefs and opinions of significant others in one's life are most likely to be reflected in an individual's beliefs, opinions, and attitudes, so direct paths from subjective norm to evaluative beliefs and general AA attitude were added.

The third area of modification was introduced to test a further strong claim of the model, namely, that intention mediates the effect of attitude on behavior. In terms of mediating hypotheses, this would appear to be satisfied in the results of the integrated theoretical model, insofar as the effect of general attitude on intention was significant and the effect of intention on behavior was also significant. However, if the effects of general attitude on behavior are completely mediated by intention, the direct path from general AA attitude to behavior should not be statistically significant, given that intention is in the model (James, Mulaik, & Brett, 2006).

The revised model resulted in a significant improvement in model fit, with $CFI = .99$, $RMSEA = .02$, $\chi^2_D(7) = 65.42$, $p < .05$. The first improvement can be seen in the direct effect of information on general AA attitude. Of the four information contrasts, only valence of information was significantly related to general attitude: The positive AA message was associated with a significantly more positive general AA attitude or, conversely, the presentation of the negative AA message was associated with a significantly more negative general AA attitude. The indirect effect of information valence on general attitude via evaluative beliefs accounted for 30% of the total effect (Shrout & Bolger, 2002). This relationship between information valence and general attitude implies that attitude change can be effected not only through the mediating role of evaluative beliefs but also directly through the manipulation of

valence of information. The differences in general AA attitude after exposure to positive versus negative information are clearly demonstrated in terms of the unadjusted means shown in Figure 4. The fact that the effects of information are apparent (a) on evaluative AA beliefs only when the information is processed centrally and (b) on general AA attitudes independent of the route of processing provides further support for the conceptual distinction between evaluative beliefs and general attitude, notwithstanding the strong relationship between the two. The direct effects of subjective norm on evaluative beliefs and general AA attitude were statistically significant. These results do not support Hypothesis 4 as expressed in Figure 1, that subjective norm directly affects only intention. Rather, they support the assertion that normative influences may directly affect both evaluative beliefs and attitudes in addition to intention, which is perhaps not unexpected. The third area of modification was to test the hypothesized mediating effect of intention on the relationship between general attitude and expressed behavior. Despite the significant bivariate correlation between general attitude and behavior ($r = .28$), the direct link between general AA attitude and expressed behavior was not statistically significant. This result supports the hypothesized mediating effect of intention on the attitude-behavior relationship; Sobel's z test of the mediation effect was significant, $z = 1.97$, $p < .05$ (Sobel, 1982). Given the significant mediation effect, the nonsignificant link between general attitude and behavior was removed, with minimal change to indices of model fit. Details of the final model incorporating the first two proposed areas of modification are shown in Figure 3 and Table 5, and overall indices of model fit are shown in Table 4.

This final model adequately captures the pattern of observed correlations, with small discrepancies between the observed and implied correlations. Variability in beliefs, attitudes, and behavior was accounted for in terms of the theoretically relevant components: 30% of variability in evaluative beliefs, 48% of variability in general AA attitude, and 66% of variability in intention were

Table 5
Path Coefficients for the Final Revised Model

Path	Standardized path coefficient	Unstandardized path coefficient	SE	z
Valence → Evaluative beliefs	0.10	16.03	10.86	1.48
Route → Evaluative beliefs	0.04	5.81	10.97	0.53
Valence × Route → Evaluative beliefs	0.20	61.94	21.84	2.84*
Information vs. control → Evaluative beliefs	0.11	18.59	11.44	1.62
Sex → Evaluative beliefs	-0.01	-0.74	11.21	-0.07
Minority → Evaluative beliefs	-0.08	-15.01	12.72	-1.18
Subjective norm → Evaluative beliefs	0.47	10.75	1.57	6.86*
Valence → General attitude	0.14	1.29	0.54	2.38*
Route → General attitude	0.01	0.06	0.54	0.11
Valence × route → General attitude	-0.07	-1.27	1.11	-1.15
Information vs. control → General attitude	0.08	0.75	0.56	1.35
Evaluative beliefs → General attitude	0.47	0.03	0.04	6.81*
Subjective norm → General attitude	0.29	0.38	0.09	4.25*
Subjective norm → Intention	0.31	0.17	0.03	5.71*
General attitude → Intention	0.61	0.25	0.02	10.92*
Intention → Expressed behavior	0.31	0.20	0.05	4.00*

* $p < .05$.

accounted for by relevant variables in the model, with 10% of variability in AA behavior explained in terms of antecedent variables.

General Discussion

This research tested the conditions under which persuasive arguments about AA are most effective in changing AA attitudes and expressed behavior in higher education. Studies 1 and 2 established the valence of the AA messages and developed an effective manipulation of the route of processing, respectively. Consistent with the ELM approach to attitude change, central (or semantic) processing resulted in more evaluative AA thoughts being listed than did peripheral processing. Given that topic-relevant beliefs and evaluations are the precursors of attitudes, and the targets for attitude change in the TRA model, it was necessary to establish the effectiveness of our manipulation of the route of processing before testing the integrated model.

Theoretical Implications

Study 3 tested the integrated model of AA attitudes and expressed behavior. With systematic variations in route of processing and valence of AA information, it was established that differences in evaluative beliefs about AA could be realized. Students' evaluative beliefs revealed higher levels of support for AA policies only when positive information had been processed in a deep, elaborative manner. Interestingly, negative AA information that was processed centrally led to decreased support for AA policies relative to the peripheral processing condition. Together these findings highlight that persuasive arguments, whether positive or negative, that are processed in an evaluative manner are most effective and, in turn, provide empirical support for the ELM aspect of our integrated theoretical model. The nonsignificant difference in evaluative attitudes between the central/positive and negative/peripheral groups reported in Table 2 may reflect differences in group composition, in that there was a slightly higher (but

nonsignificant) proportion of minority group members in the negative/peripheral condition. The initial tests reported in Table 2 did not control for sex and minority status, but the inclusion of these variables in the model ensures that any differences in evaluative attitudes can be assumed to apply to individuals of the same sex and minority status.

Some important modifications to the integrated framework depicted in Figure 1 were required to achieve a satisfactory fit of the model to the data. For example, the substantial effect of subjective norm on evaluative beliefs and AA attitudes revealed in the final model is not surprising in the context of AA, despite the lack of apparent link between these components in the original TRA approach. It may be that AA in a higher education context is such a politically sensitive area, yet lacking explicit publicized implementation in tertiary settings, that students have not formed their own opinions, so that their evaluative beliefs are strongly influenced by the perceived attitudes of significant others. Furthermore, a large proportion of first-year university students in urban areas still live in their parents' home and may be more influenced by parents' opinions than is the case for other attitudinal domains. Ajzen and Fishbein (1980) acknowledged that there may be variation in the relative importance of components of the model between different domains and that for cooperative behaviors (of which AA would seem to be a clear example), normative considerations may be more important. These considerations would seem to justify the inclusion of the links between evaluative beliefs, general attitudes, and subjective norm.

A further modification was the link enabling a direct effect of valence of information on general AA attitude rather than restricting it to an indirect effect mediated by evaluative beliefs. As seen in Figure 4, presentation of information detailing the benefits of AA for minority groups resulted in significantly more positive general AA attitudes. Despite the lack of a significant effect of positive versus negative information on evaluative beliefs in the peripheral processing condition, a main effect of message valence was found for general AA attitudes. This implies that, indepen-

dently of the route through which the information is processed, the positive aspects of the messages pertaining to general aims of AA, such as redressing past discrimination or improving socioeconomic situations for target groups, may impact more on the general feeling of favorableness toward AA rather than on specific beliefs and evaluations. Alternatively, it may be the case that durable changes in general attitude only occur with changes in evaluative beliefs, and that this effect reflects a temporary change in attitude resulting from having recently heard positive or negative information on the topic. It is not possible to determine whether the direct effect of valence of information on general attitudes is temporary, given the design of the present study. A longitudinal study would be required to clarify these competing interpretations. Another possibility is that the effect of message valence on general AA attitude may be mediated by evaluative beliefs that were not assessed in this study. The evaluative beliefs scale included 10 beliefs, and had satisfactory internal consistency, but could perhaps be improved with the inclusion of more items. These are interesting issues for future research.

The final model, as depicted in Figure 3, reveals that intention is a reliable predictor of behavior in the context of AA in higher education and that intention mediates the relationship between AA attitude and expressed behavior. This finding is supported by previous TRA research (Brubaker & Fowler, 1990; McClenney & Neiss, 1989; Netemeyer & Burton, 1990; K. Singh et al., 1995).

Methodological Issues and Future Directions

This research highlights the importance of several methodological issues when investigating the information–attitude–intention–behavior relationship. The first design strength was the inclusion of a manipulation check (in the form of a thought-listing task) in order to accurately measure the effectiveness of the central–peripheral processing implementation. In addition, the inclusion of the AA knowledge quiz provided all participants with a baseline understanding of AA that allowed for better evaluation of AA persuasion techniques. The feedback given to participants in the AA quiz rendered the interpretation of the AA knowledge scores problematic; hence, the scores were not included as predictors in the model. Related to this, Kravitz and Klineberg (2000) argued that “when an [AA program] is explicitly described, that description affects the relevant beliefs. When no description is provided, the respondents’ beliefs about AA are determined by his or her individual characteristics and past experiences” (p. 599). Therefore, the inclusion of feedback on the AA quiz may have reduced some initial opposition to AA that results from an unclear understanding of what AA actually involves (Kravitz & Platania, 1993). Additionally, by increasing knowledge about AA, it is possible that the power to detect effects of information manipulation were reduced, so that the effects that were revealed are, by implication, more robust than they might otherwise appear to be.

The sample ratio of 74% female and 83% Anglo-Australians makes it difficult to form any strong conclusions about the relationship between sex, ethnic group, and AA support. A more balanced representation of gender and racial minorities would be needed to explicitly investigate such relationships. Suffice to say that we were still able to increase support for AA among this group. Whether the success of the manipulations used in the present study would generalize beyond the Australian university

context to other adult groups is not certain; such groups may have long-held stereotypes about disadvantaged groups that may be less amenable to persuasion.

The single-item measure of intention might be regarded as a limitation of the present research. However, a single-item measure is commonly used in TRA research (Morrison et al., 2002; Valleraud et al., 1992), and our results supported the theoretical prediction that intention mediates the attitude–behavior relationship.

Another possible limitation concerns the AA behavior measure used. Direct behavioral AA measures are rare (Bell et al., 2000). The laboratory setting does not allow for an actual test of AA behavior, so out of necessity, it may be assessed experimentally only through artificial scenarios. Harrison et al. (2006) noted that “as there were no systematic laboratory versus field differences, there is little reason to be concerned about inflated estimates of effects due to the use of artificial scenarios with student subjects” (p. 1029). Furthermore, it is the case that once students are admitted to university they can enroll in any course relevant to their degree program. However, it is realistic to assume that the introductory-level participants in the present study, who had as yet little experience of university procedures, were unlikely to have drawn this distinction between university admission and course admission. There is no reason to assume that the artificiality of the selection to be made affects the intention–behavior link. As a more realistic assessment of AA behavior, future researchers may consider monitoring students who report positive attitudes to AA policies (i.e., special admission programs) to record whether they also volunteer to mentor fellow students from racial minorities over a 1-week period at university.

Practical Implications for Affirmative Action Research

In a recent review of 22 countries Myers et al. (2008) reported that forms of AA in the employment selection context varied, ranging from active recruitment and training of women or racial groups that have been traditionally disadvantaged to the use of lower standards for these groups. For example, within Australia, targets may be used rather than explicit quotas, whereas within the United States any form of preferential treatment is prohibited, except in cases of confirmed discrimination. Taking into consideration these differing legislative AA frameworks, the following implications of our study may be more applicable to countries that implement AA policies in a manner similar to that of Australia.

Tertiary education institutions concerned with increasing support for AA should (a) provide factual information about AA policy, and should encourage students and stakeholders (b) to focus on the benefits of AA for their university and (c) to adopt “deep” approaches to understanding the AA information. There is an extensive literature on the positive relationship between approaches to learning and student achievement (Biggs, 1999). Deep learning involves attention to the meaning of the subject matter, that is, understanding, integration, elaboration, and evaluation of the information being presented, as opposed to surface learning, which involves skimming or rote learning. Conceptually, the deep versus surface approach parallels the central–peripheral distinction of the ELM.

With greater AA support, there are more likely to be minority graduates to provide role models, promote integration, and ultimately enable diversity (Renner & Moore, 2004). The results of

this study revealed that in order to increase individuals support for AA policy, the simplest and probably most efficient approach is to have them attend to the meaning of AA information that presents positive aspects of such policies. Together, these findings support Golden, Hinkle, and Crosby's (2001) claim that with a greater understanding of AA, the "distance between the supporters and opponents of affirmative action may decrease" (p. 83). Overall, this experimental research study has shown that when appropriate intervention strategies are implemented, increasing support for AA policy in higher education is achievable.

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Appendix

Affirmative Action Knowledge Quiz

- The term affirmative action refers to:
 - Strategic plans used in the armed forces
 - Hiring quotas only
 - Policies seeking to eliminate current discrimination as well as redress past discrimination*
 - Never heard the term before.
- In Australia, legislation about affirmative action in employment specifically targets:
 - Women*
 - Indigenous people
 - Asian people
 - Middle Eastern people
- Affirmative action may include:
 - Mentorship programs
 - Recruitment aimed at underrepresented groups
 - Hiring targets
 - All of the above*
- A special measure may be taken to achieve equity. Equity refers to equality of outcomes. In Australian education, this may involve achieving equality between:
 - Women and men
 - Indigenous and White Australians
 - People with disabilities and people without disabilities
 - All of the above*
- In an educational context affirmative action policies:
 - Mean that all Aboriginal or Torres Strait Islander applicants will be admitted
 - May utilize different selection criteria for individuals belonging to certain groups*
 - Mean that equivalent numbers of males and females will be admitted
 - None of the above
- In organizations, when women, for example, are underrepresented, affirmative action aims to:
 - Ensure half of all employees are women

(Appendix continues)

- (b) Ensure that women are proportionately represented relative to the available workforce*
 - (c) Promote the hiring of women only, until the numbers even out
 - d) None of the above
7. In Australia, quotas, requiring a certain number of women or minority group members to be hired or accepted into courses are:
- (a) Legal and encouraged
 - (b) Legal, but only when imposed by a court
 - (c) Illegal*
 - (d) None of the above
8. Affirmative action or equal employment opportunity programs are required:
- (a) By any company with over 100 employees*
 - (b) Only in the public service
 - (c) Only in community organizations
 - (d) Only in the private sector
9. NSW [New South Wales] legislation defines Equal Employment Opportunity (EEO) groups as groups who have traditionally been disadvantaged in employment. These include which of the following?
- (a) Women and indigenous people

- (b) People from non-English speaking backgrounds
 - (c) People with a disability
 - (d) All of the above*
10. Vocational training programs, like computer training, for example, which may be particularly beneficial for target groups:
- (a) Are not classified as affirmative action
 - (b) Are considered affirmative action, but only when target group members alone are involved
 - (c) Are considered to be affirmative action, even when any person may participate*
 - (d) None of the above

Note. An asterisk denotes the correct answer. The affirmative action quiz was adapted from Kravitz and Platania (1993), Part 9A of the Anti-Discrimination Act (New South Wales Government, 1977) and the Affirmative Action (Equal Employment Opportunity for Women) Act (Australian Commonwealth Government, 1986).

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