

Effects of personalization and envelope color on response rate, speed and quality among a business population

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Abstract

The purpose of this experiment was to investigate the main and interaction effects of personalization (handwritten addresses versus computer-printed address label) and envelope color (brown versus white) on the response rate, response speed and response quality of a mail survey distributed to a business population. By examining multiple criteria of response speed and response quality as well as response rate, this study offers a more complete measure of effectiveness and expands on the majority of past research that has focused almost exclusively on the number of replies received. Moreover, it helps to redress the current paucity of research into the exploration of potential interaction effects among manipulated survey design features. No statistically significant main or interaction effects of personalization and envelope color on response rate, response speed or response quality were found. Practical implications of the findings for survey researchers are discussed.

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1. Introduction

Although postal questionnaires can be convenient and less expensive than other survey methods (Woodruff, Edwards, & Conway, 1998) a typical criticism associated with this mode is a low response rate. However, the literature is rife with numerous studies that investigate various strategies for influencing response. A range of response variables can be manipulated to potentially increase response. These have been grouped into five broad factors: cover letter, incentive, respondent contact, postage/ mailing and the questionnaire itself (Fox, Crask, & Kim, 1988). Within these five variables, a litany of factors have received attention in the literature including inter alia, prenotification (Lynn, Turner, & Smith, 1998; Taylor & Lynn, 1998) type of appeal (Dillman, Singer, Clark, & Treat, 1996; Gendall, Hoek, & Esslemont, 1995), statement of confidentiality/anonymity (Faria & Dickinson, 1996; Singer, Von Thurn, & Miller, 1995) use of follow-ups (Woodruff et al., 1998), use of stamps

versus business reply (Tse, Ching, Ding, Fong, & Yeung, 1994), questionnaire color (Buttle & Thomas, 1997) and identification numbers (Kalafatis & Blankson, 1996; McKee, 1992). In addition, several meta-analyses have been carried out into the effectiveness of techniques used to influence mail survey response which have found that the most successful factors in consistently influencing response rates are repeated contacts, type of postage and the use of incentives (Fox et al., 1988; Yammarino, Skinner, & Childers, 1991; Yu & Cooper, 1983).

Although personalization has received attention in the literature, empirical findings are inconclusive. This issue will be fully explored later. Moreover, the majority of past research has focused almost exclusively on response rate. As a result, little is known about the relationship between various survey design features and other response criteria such as response speed and response quality. Faster research project turnarounds are increasingly required (McPhee, 2002), and therefore, speed of return is important not only to ensure timeliness of data but also in potentially reducing the overall cost of the survey if fewer people need to be contacted for follow-up. Likewise, a lack of high-quality data could militate against the benefits of impressive response rates. By including response speed and response quality this study offers a more complete measure of effectiveness. In

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addition, while a few studies have focused on the color of the questionnaire paper, in contrast, the envelope color has received scant attention. The limited amount of available empirical evidence relating to envelope color is discussed later in the article.

The growth of computer-mediated communication has opened up new survey channels, i.e., email, internet, intranet, and it could be argued that research into the effectiveness of ‘snail mail’ survey design features is fast becoming obsolete. However, while advantages such as a significantly faster speed of reply and lower costs (Mavis & Brocato, 1998; Tse, 1998) as well as increased response rates (Goldhaber, 2002) have been reported with computer-mediated surveys when compared with traditional paper based surveys, the new methods are not without their problems. For example, the availability of sampling frames that include e-mail addresses is limited. Erdogan and Baker (2001) reported problems with an Institute of Practitioners in Advertising (IPA) sampling frame where they were unable to communicate with as much as 40% of IPA members because they either did not have their e-mail address listed or it was listed incorrectly. Due to problems such as this, we believe it is unlikely that e-mail surveys will completely replace mail surveys at this time, and therefore, research investigating the effectiveness of response inducing variables is still useful.

The present study examined the main and interaction effects of personalization and envelope color on the response rate, speed and quality of a questionnaire distributed to a business population defined as, “commercial, industrial, administrative and/or business respondents who receive a questionnaire at their place of employment” (Pressley, 1978, p. 342). Research in the business context holds many challenges; therefore, this study is important to researchers, academics and practitioners who wish to conduct research among business populations and who are interested in the variables that positively influence response in this context in order to lessen the possibility of non-response bias in their investigations and reduce the overall costs of the mail survey. Indeed, although the results of research conducted among both consumer and business populations are often treated as interchangeable, some researchers have advised against generalizations since the effects of a particular technique may vary between consumer, academic and business populations (Childers, Pride, & Ferrell, 1980; Dillman, 1978; Forsgren, 1989; Pressley, 1978; Tomaskovic-Devey, Leiter, & Thompson, 1994; Yammarino et al., 1991).

This paper is organized into six sections. Firstly, some reasons why research among business audiences can pose particular challenges are briefly outlined. Secondly, the literature pertaining to the two experimental variables of personalization and envelope color is then reviewed. The third section provides a description of the methodology of the current experiment. In the fourth and fifth segments, the results are summarized and discussed before the final section concludes by offering practical implications for researchers.

2. The business research context

Research among business populations can be particularly challenging for a number of reasons. Firstly, response rates from

business populations are generally lower than those from consumer surveys (Baldauf, Reisinger, & Moncrief, 1999; Tomaskovic-Devey et al., 1994). Although there is no agreed norm for an acceptable response rate in research studies (Baruch, 1999) figures ranging from 75% (Dillman, 1978) to 20% (Denscombe, 1998) have been suggested as target rates. It is clear that no consensus exists as to what constitutes a ‘reasonable’ response. Indeed, it is very difficult to generalize across published surveys since so many variables can influence response and differences in the standards of reporting can also make it difficult to benchmark from published mail survey results. Reported response rates from a range of UK business surveys have included 18.7% (Claycomb, Porter, & Martin, 2000), 28.7% (Buttle & Thomas, 1997), 32% (Childers et al., 1980) and 36.3% (Byrom & Bennison, 2000).

Secondly, it is claimed that the market is becoming increasingly saturated with research requests (Bednall, 2002). People and organizations are bombarded with questionnaires, so much so that business people receive at least two questionnaires per week (Baldauf et al., 1999). Indeed, Baruch (1999) concluded that professionals are more frequently studied than their quota in the population. Therefore, researchers who aim to study respondents in a business setting should be aware of the most effective strategies in this context to vie for cooperation and commitment from respondents in an increasingly competitive research environment.

Finally, refusal rates in industrial surveys are increasing due to ‘time famine’ (McPhee, 2002). A study by Baldauf et al. (1999) found that the most frequently stated reasons for refusal to respond to mail surveys included a timing dimension. As well as a lack of time, business populations are also less likely to respond to surveys than consumers because of confidentiality of information (especially financial) and company policies (Greer, Chuchinprakarn, & Seshadri, 2000; Tomaskovic-Devey et al., 1994).

Having outlined why it is important to examine ways of increasing response among business populations, the variables of personalization and envelope color are now discussed.

2.1. Personalization

No absolute definition of personalization exists. In the current literature it has been construed in many different ways and has taken the form of handwritten elements, addressing a specific individual and the use of postage stamps (See Table 1). In general, personalization demonstrates an effort on the part of the researcher to make the mailing package appear personal in some way, thus avoiding a mass-produced appearance.

There are number of reasons why personalization is thought to be an important factor in influencing response. To begin with, it may demonstrate to the recipient that he/she is individually important (Dillman, 1978). Secondly, personalization may evoke the norm of reciprocity (Gendall, Hoek, & Brennan, 1998). That is, because researchers have taken the time and effort to individualize the questionnaire package, it is hoped that the respondent will feel obliged to take the time to complete the questionnaire. In addition, it has been suggested that hand addressed mailing

Table 1
Summary of definitions and effects of personalization among business populations^a

Study	Definition of personalization	Dependent variable	Result
Forsythe (1977)	Letters addressed by name vs. letters addressed to 'Chief Officer'	Response rate	Significant decrease
Pressley (1978)	Handwritten postscript on cover letter vs. no postscript	Response rate	Not significant
Little and Pressley (1980)	Inclusion of card with handwritten phrase vs. non-personalized card vs. no card	Response rate	Not significant
		Response speed	Not significant
		Response quality	Not significant
Childers et al. (1980)	Handwritten postscript on cover letter vs. typed postscript	Response rate	Not significant
		Response completeness	Not significant
		Response bias	Not significant
Yu and Cooper (1983) ^a	NA	Response rate	Significant increase
Wunder and Wynn (1988)	Hand addressed envelope vs. envelope with computer generated address label	Response rate	Not significant
		Response speed	Not significant
		Response quality	Not significant
Neider and Sugrue (1983)	Hand addressed envelope vs. typed envelope vs. computer generated mailing label	Response rate	Significant decrease
Clark and Kaminski (1990)	Handwritten cover letter and signature and individual salutation vs. typed cover letter, facsimile signature and 'Dear AMAColleague' salutation	Response rate	Significant increase
Yammarino et al. (1991) ^a	NA	Response rate	Significant increase
Sutton and Zeits (1992)	Survey materials addressed to individual vs. survey materials addressed to business name	Response rate	Not significant
Byrom and Bennison (2000)	Envelope with handwritten address and postage stamp vs. franked envelope with typewritten address	Response rate	Not significant
Cycyota and Harrison (2002)	Handwritten yellow 'sticky' note attached signed by research team member and personal salutation on cover letter vs. no note and generic salutation	Response rate	Not significant
Dennis (2003)	Typed (lasered) address and salutation vs. label attached to envelope and 'Dear (generic)' salutation on cover letter	Response rate	Not significant
Larson and Chow (2003)	Personalized letter vs. nonpersonalized	Response rate	Significant increase

^a Meta-analysis results were aggregated across consumer, academic and business populations.

envelopes are less likely to be perceived as junk mail (Helgeson, 1994). It is further assumed that personalization is particularly important in industrial mail surveys to ensure that the questionnaire is received by the appropriate person within an organization (Gendall, 2005).

The effects of personalization on response rates have been investigated among consumer, academic and business populations. Table 1 presents a summary of key experimental studies using personalization as a response inducement factor in business surveys. Three main points can be extracted from a perusal of Table 1. Firstly, it can be noted that attempting to generalize across experimental studies is made difficult by the inconsistent ways in which personalization has been operationalized. Studies have focused both on the envelope and cover letter. Envelope characteristics such as handwritten versus typed/computer-printed addresses and postage stamp versus franking have been manipulated, as well as features of the cover letter including handwritten versus typed signatures and postscripts and individual versus generic salutations. The situation is made more complicated by the fact that different studies have employed various combinations of these variables.

Secondly, it is evident that findings on the effectiveness of personalization are inconclusive. Studies by, for example, Clark and Kaminski (1990) and Larson and Chow (2003), as well as meta-analyses by Yu and Cooper (1983) and Yammarino et al. (1991), support the use of personalization in increasing response rates. However, the evidence favoring the personal touch has been challenged by other researchers such as Pressley (1978), Cycyota and Harrison (2002) and Dennis (2003), who found that it did not significantly influence the number of replies. In con-

trast, Forsythe (1977) and Neider and Sugrue (1983) revealed that personalization did have a significant impact on response rate, but that its effect was to decrease response. Indeed, Harvey (1987), after a comprehensive literature review of studies among various samples, concluded that the effects of personalization depend upon the target population and the aims of the questionnaire.

Finally, it can be seen from Table 1 that the majority of research has concentrated on the sole criterion of response rate with relatively few studies investigating beyond the number of replies received to examine the impact of personalization on other dependent variables such as response speed or response quality (these dimensions of rate, speed and quality of response are operationalized later in the paper). While a high rate of response is, of course, important in reducing non-response bias, lack of quality or timeliness of data could temper the benefits of impressive response rates. Of the minority who has used multiple criteria, Childers et al. (1980) investigated the influence of handwritten versus typed postscripts on response rate, response completeness and response bias. Defining response completeness as the number of unanswered questions and response bias as the extent to which responses varied across treatment and control groups, they found no significant main or interaction differences. Further evidence of the lack of significant differences was provided by Wunder and Wynn's (1988) experiment exploring the effect of handwritten versus computer-printed addressed envelopes on response rate, speed and quality. In contrast, Little and Pressley (1980) tested the effect of a personalized, nonpersonalized or no business card treatment on response rate, respond speed and response quality and while

Cover letter	<ul style="list-style-type: none"> • Printed on university-headed paper. • Included a handwritten signature. • Aim of the study was clearly stated. • Social Utility and Help-the-Sponsor Appeal. • Statement of confidentiality. • Deadline for return.
Respondent contact	<ul style="list-style-type: none"> • Follow-up letters and a duplicate questionnaire to non-respondents were issued after 6 weeks.
Postage/Mailing	<ul style="list-style-type: none"> • University franked outgoing envelopes. • 2nd class postage. • 2nd class stamped reply envelopes.
Questionnaire	<ul style="list-style-type: none"> • 4 pages long • Printed on white paper • Printed on one side and stapled. • Contained a questionnaire identification number and explanation.

Fig. 1. Framework for Questionnaire Administration. Source: after Fox et al. (1988).

finding no significant main effects, they discovered a significant interaction effect between the business card treatment and envelope color in regard to response speed.

Given that the empirical findings relating to the ability of personalization to stimulate response rate in mail surveys are mixed, there is indeed room for additional testing. Further examination of the influence of this particular technique on additional criteria such as response speed and response quality is also warranted. Moreover, the potential interaction effects among manipulated survey design features require exploration.

2.2. Envelope color

Although the effect of questionnaire color on response has received some attention in the literature (Buttle & Thomas, 1997; Helgeson, Voss, & Terpening, 2002; Jobber & Sanderson 1983; Matteson, 1974) the color of the envelope has been given little consideration. Research has mainly focused on the postage/ mailing dimensions of envelopes. In fact, of the mail survey articles reviewed in the meta-analyses by Yu and Cooper (1983), Fox et al. (1988) and Yammarino et al. (1991), none used envelope color as a response variable either in consumer or business

Table 2
Response rates

Variable	Response to first mailing				Response to second mailing				Overall response				Total response by color	
	Handwritten		Computer label		Handwritten		Computer label		Handwritten		Computer label			
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		
White	7	29.2	9	37.5	3	23.1	3	23.1	10	41.7	12	50	22	45.8
Brown	10	41.7	8	33.3	5	41.7	4	25	15	62.5	12	50	27	56.3
Total response by personalization									25	52.1	24	50		

Table 3
Response speed

Variable	Mean number of days taken to reply						Mean days by color
	First mailing		Second mailing		Overall		
	Handwritten	Computer label	Handwritten	Computer label	Handwritten	Computer label	
White	10.4	9.2	6	9	9.1	9.2	9.1
Brown	9.7	7.75	10.6	9	10	8.2	9.2
Mean days by personalization					9.6	8.7	

contexts. An extensive literature search by the authors found only one article that experimentally tested the effect of the return envelope color on response rates. Over 25 years ago, [Little and Pressley's \(1980\)](#) study found that while the return envelope color had no significant effect on response rate or response quality, it was a significant factor in response speed with yellow, blue and buff color envelopes resulting in mean response speeds of 8.5, 9.09 and 9.8 days, respectively. Moreover, they also found significant interaction effects between envelope color and personalization in regard to response speed. Despite their conclusion that this “indicates an inadequate understanding of the dynamics underlying the association between various factors and the different criteria variables composing survey responsiveness” (p. 399), little interim research has focused upon clarifying the effects of envelope color. The dearth of research examining envelope features is surprising since all mail surveys require an envelope. It is the respondents' first contact with the research and therefore important in forming first impressions and is easy for the researcher to control. Yet relatively little is known about the effect of manipulating various envelope features.

Given the inconclusive evidence in past research and the paucity of studies examining response speed and response quality, an experiment was designed in order to investigate three key Research Questions:

- RQ1: In mail surveys among business populations, what effect, if any, does personalization have on response rate, speed and quality?
- RQ2: Does the color of the envelope influence response rate, speed and quality in mail surveys of business audiences?
- RQ3: Are there any interaction effects between personalization and envelope color on response rate, speed and quality among business respondents?

3. Methodology

The present study was an integral part of a mail survey designed by the authors to investigate practice of, and attitudes towards public relations evaluation. The 4-page questionnaire mainly consisted of closed questions but contained three final open questions. The questionnaires were mailed to the 96 Institute of Public Relations (IPR) members in Northern Ireland identified from the Institute's Membership Handbook. The framework for the postal questionnaires adopted in all groups is illustrated in [Fig. 1](#). With the exception that only one follow-up was used and no incentives were offered, [Dillman's \(1978\)](#) Total

Design Method (TDM) was followed and consideration was given to all the minute details of the questionnaire administration.

This study tested two address mode conditions and two envelope colors. [Dillman \(1978\)](#) recommended that when designing a mail survey, consideration should be given to building a set of complementary techniques to achieve consistency among individual elements. Therefore, the manipulations within the two variables of handwritten addresses versus computer-printed adhesive labels and brown versus white envelopes were chosen to be distinctive but also consistent with the overall research investigation and stay within the boundaries of accepted professional methods.

The two address mode conditions involved computer-printed adhesive labels versus handwritten addresses. Personalization has been operationalized as a personalized letter addressed to a specific individual ([Schafer & Dillman, 1998](#)) as opposed to a generic salutation of ‘Dear Sir/Madam’. However, with the advent of technology such as ‘mail merge,’ inserting individuals' names into a mass-produced letter and label is no longer difficult. Therefore, in this study personalization was achieved by handwriting the recipient's name on the outgoing envelope and cover letter and also handwriting the researcher's address on the reply envelope provided. The non-personalized treatment

Table 4
Results of ANOVA for response speed

Source of variation	Sum of squares	DF	Mean square	F	Significance of F
<i>Overall Replies</i>					
Main effects					
Personalization	9.363	1	9.363	.350	.557
Envelope color	.030	1	.030	.001	.973
Two-way interaction					
Personalization × Color	10.830	1	10.830	.405	.528
<i>Replies to first mailing</i>					
Main effects					
Personalization	20.8	1	20.8	.911	.347
Envelope color	10.112	1	10.112	.443	.511
Two-way interaction					
Personalization × Color	1.155	1	1.155	.051	.824
<i>Replies to second mailing</i>					
Main effects					
Personalization	1.755	1	1.755	.041	.843
Envelope color	18.949	1	18.949	.444	.519
Two-way interaction					
Personalization × Color	18.949	1	18.949	.444	.519

Table 5
Response quality: mean item omission

Variable	First mailing		Second mailing		Overall		Mean item omission by color
	Handwritten	Computer label	Handwritten	Computer label	Handwritten	Computer label	
White	1.0	5.9	1.0	2.7	1.0	5.1	3.2
Brown	1.4	1.6	2.2	0.8	1.7	1.3	1.5
Mean item omission by personalization					1.4	3.2	

involved computer-printed address and reply labels on outgoing and return envelopes. In all cases, the cover letter was word processed and not handwritten because, over and above the time it would take to hand write 48 letters, “a business person would not write a letter by hand, for to do so would seem inefficient and unwarranted, because there was no preexisting personal relationship”, (Dillman, 1978, p. 195).

White and brown envelope colors were chosen for the experiment. These staid colors were chosen above alternative bright colors in order to keep within accepted business practice and to reflect the seriousness and nontrivial nature of the research. It was thought that white would produce a distinctive package that would stand out from the standard brown manila envelope usually found among the stack of mail of most busy professionals and perhaps also arouse enough curiosity for the recipient to open it.

From the population of 96 IPR members, each person was randomly assigned to one of the following four treatment groups, resulting in 24 potential respondents per cell:

- Handwritten address and salutation with white envelopes (HW)
- Handwritten address and salutation with brown envelopes (HB)
- Computer-printed address label and salutation with white envelopes (CW)
- Computer-printed address label and salutation with brown envelopes (CB).

The criteria used to evaluate the effectiveness of the treatments were response rate, response speed and response quality. As definitions of response rate, speed and quality vary across studies, the meanings adopted in the present study are now clarified:

- Response rate was defined as the number of useable returned questionnaires expressed as a percentage of the number in the sample.
- The definition of response speed was the number of business days (i.e., excluding Saturdays and Sundays) elapsing from the day a questionnaire was sent out until a completed questionnaire was received.

- After reviewing several studies, the quality of response was defined along two dimensions:

- 1) item omission defined as the number of unanswered questions (Gendall et al., 1998; Mavis & Brocato, 1998; Tse et al., 1994). The maximum number of questionnaire responses was 64 and the item omission index was unweighted giving all answers equal importance.
- 2) number of words used to respond to open-ended questions per questionnaire (McKee, 1992; Schafer & Dillman, 1998; Willimack, Schuman, Pennell, & Lepkowski, 1995).

3.1. Data analysis

Due to the sample size and the dichotomous nature of the response rate variable (i.e., response was assigned a code of 1, non-response a code of 0) chi-square tests were conducted in order to evaluate whether the response rates generated by each treatment of personalization (handwritten versus computer label address) and envelope color (brown versus white) significantly differed. Two-way ANOVAs were employed in order to determine the main and interaction effects of personalization and envelope color on response speed and response quality.

4. Results

Of the 96 questionnaires mailed, 61 responses were generated. However, 12 of these were uncompleted, leaving an overall response rate of 51%. In order to ascertain the potential existence of non-response bias, that is whether non-respondents differed in some systematic way from respondents, survey results were compared with known values for the population (Armstrong & Overton, 1977). The IPR membership was examined by gender and compared with the gender composition of the returned sample. Of the total population of 96 IPR members, 46.87% were males, whereas 53.13% were females. The proportion of survey respondents was 46.94% male and 53.06% female, indicating that respondents appeared to be representative on this variable at least.

Table 6
Response quality: mean number of words in replies to open questions

Variable	First mailing		Second mailing		Overall		Mean number of words by color
	Handwritten	Computer label	Handwritten	Computer label	Handwritten	Computer label	
White	40.1	21.0	60.3	38.7	46.2	25.42	34.9
Brown	53.8	34.5	72.0	63.0	59.87	44.00	52.8
Mean number of words by personalization					54.4	34.7	

Table 7
Results of ANOVA for item omission

Source of variation	Sum of squares	DF	Mean square	F	Significance of F
<i>Overall replies</i>					
Main effects					
Personalization	42.188	1	42.188	2.847	.098
Envelope color	28.521	1	28.521	1.924	.172
Two-way interaction					
Personalization × Color	58.521	1	58.521	3.949	.053
<i>Replies to first mailing</i>					
Main effects					
Personalization	54.600	1	54.600	2.646	.114
Envelope color	31.170	1	31.170	1.510	.229
Two-way interaction					
Personalization × Color	45.414	1	45.414	2.200	.148
<i>Replies to second mailing</i>					
Main effects					
Personalization	420.4	1	420.4	.023	.883
Envelope color	.460	1	.460	.250	.627
Two-way interaction					
Personalization × Color	8.699	1	8.699	4.733	.052

Next, the effects of personalization and color are reported under the three criteria of response rate, response speed and response quality. As well as presenting overall results, the findings are also examined for both the initial and follow-up mailing waves. The response rate, response speed and response quality for each treatment are summarized in Tables 2, 3, 5 and 6, while the results of the ANOVAs for the main and interaction effects on response speed and response quality are presented in Tables 4, 7 and 8.

4.1. Response rate

As illustrated in Table 2, the handwritten envelopes generated one additional returned questionnaire compared with the computer-printed labels and the chi-square test results indicated no significant relationship between personalization and response rate ($\chi^2=0.42$, $p<0.838$). Although the use of brown envelopes over white increased response by approximately 10%, this difference was not significant ($\chi^2=1.042$, $p<0.307$).

The response rates for the four treatment groups ranged from 41.7% to 62.5%. While the handwritten brown envelopes produced the highest response rate, overall interaction effects between personalization and envelope color were not found to be significant ($\chi^2=2.126$, $p<0.547$). Similarly, there were no significant differences in response rates for each survey mailing.

Additional tests were performed that included all survey replies in the analysis (i.e., inclusive of the 12 uncompleted returns). However, once again, no significant differences were found.

4.2. Response speed

Replies were received an average of 1 day faster with the computer address labels compared with the handwritten ad-

dresses (see Table 3). On the other hand, the separate envelope colors resulted in virtually no difference with regard to speed of reply with questionnaires returned in an average of 9 days for both brown and white envelopes. However, as indicated in Table 4, neither personalization nor envelope color significantly affected response speed ($p=.557$ and $.973$, respectively).

While combining brown envelopes with computer address labels produced the fastest overall response ($m=8.2$ days), Table 4 also shows that there were no significant interaction effects between personalization and envelope color ($p=.528$). In addition, an examination of each mailing wave revealed no consistent discernable pattern. Consequently, response speed was not found to differ significantly with each survey mailing (see Table 4).

4.3. Response quality

Response quality was measured along two separate criteria of item omission and number of words in the replies to open questions. In relation to the effects of personalization on response quality, it can be seen from Tables 5 and 6 that handwritten addresses generated more thoroughly completed questionnaires than computer-printed labels. The average number of missing answers with handwritten addresses was only 1.4 compared with 3.2 for computer-printed labels. Likewise, when addresses were handwritten, respondents wrote longer answers to open-ended questions ($m=54.4$). However, the ANOVA results presented in Tables 7 and 8 reveal that these differences were not significant ($p=.098$ for item omission and $p=.091$ for number of words).

Tables 5 and 6 demonstrate that, when compared with white envelopes, brown envelopes produced overall higher quality data. Questionnaires sent and returned in brown envelopes had fewer missing items (1.5 representing 2.3% of the questionnaire) and longer answers to open ended questions ($m=52.8$

Table 8
Results of ANOVA for number of words in replies to open questions

Source of variation	Sum of squares	DF	Mean square	F	Significance of F
<i>Overall replies</i>					
Main effects					
Personalization	4029.668	1	4029.668	2.987	.091
Envelope color	3120.187	1	3120.187	2.313	.135
Two-way interaction					
Personalization × Color	72.521	1	72.521	.054	.818
<i>Replies to first mailing</i>					
Main effects					
Personalization	3085.493	1	3085.493	2.897	.099
Envelope color	1539.790	1	1539.790	1.446	.239
Two-way interaction					
Personalization × Color	515.6	1	515.6	.000	.994
<i>Replies to second mailing</i>					
Main effects					
Personalization	842.189	1	842.189	.387	.546
Envelope color	1160.597	1	1160.597	.534	.480
Two-way interaction					
Personalization × Color	143.682	1	143.682	.006	.802

words). However, an examination of [Tables 7 and 8](#) shows that envelope color had no statistically significant effect on response quality ($p=.172$ for item omission and $p=.135$ for number of words).

Further analysis of [Tables 5 and 6](#) reveals that within each of the four treatment groups, combining computer-printed labels and white envelopes resulted in the highest overall incidence of missing items ($m=5.1$) as well as the shortest answers to open-ended questions ($m=25.42$). Furthermore, this fact was consistent for each mailing wave. The most successful combination for reducing item omission was handwriting addresses on white envelopes ($m=1.0$), whereas, in terms of promoting lengthier answers to open-ended questions, handwritten addresses on brown envelopes was the most effective association ($m=59.87$). However, [Table 7](#) illustrates that no significant interaction effects were found regarding item omission ($p=.053$) although the value of .053 is very close to the 0.05 significance level. Likewise, [Table 8](#) shows no significant interaction effects between personalization and envelope color in respect of the number of words in open-ended replies ($p=.818$). Similarly, when each mailing wave was examined, no significant main or interaction effects occurred.

5. Discussion

The present experiment was designed to investigate the effects of personalization and envelope color on response rate, response speed and response quality among a business population. Before discussing the results it is useful to outline the limitations of the present research study. Firstly, given that the sample size was relatively small (49 ‘full’ responses) generalizations to other situations should be used cautiously. Likewise, whether the same results would be generated with surveys of different topics or sampling frames remains to be determined. As with all surveys which sample members of a professional organization, there is a potential bias that members may differ from non-members. A replication of this study with other business and consumer populations would help to confirm results. In addition, the accuracy of respondents’ self-reported behavior could not be examined as no concurrent comparative data was available ([Woodside & Wilson, 2002](#)). Finally, in this study the item omission index was unweighted indicating that each question was of equal importance. However, in other studies it may be more useful to construct a weighted index where answers to particular questions are deemed more valuable than others.

In answer to Research Question 1: “In mail surveys among business populations, what effect, if any, does personalization have on response rate, speed and quality?”, findings have indicated that although personalization slowed response speed by one day and generated more thoroughly completed questionnaires than computer-printed labels, there was no statistically significant relationship to response rate, response speed or response quality. Similarly, this study found that while brown envelopes generated a quantitatively higher number of replies and higher quality data, there were no significant differences in response rate, response speed or response quality when white envelopes were compared with brown. Likewise, the interaction

of personalization and envelope color was not significant with regard to response rate, response speed or response quality.

Therefore, the findings of this experiment do not support the use of personalization to positively influence response rate, response speed or response quality. Consistent with other studies by, for example, [Byrom and Bennison \(2000\)](#), [Cycyota and Harrison \(2002\)](#) and [Dennis \(2003\)](#), we found no evidence of the efficacy of personalizing mail surveys in increasing response rate in a business context. In addition, the inability of personalization to produce significant differences in relation to response speed and response quality has also been evidenced by [Childers et al. \(1980\)](#) and [Little and Pressley \(1980\)](#). However, the results of the present study are in contrast to [Larson and Chow’s \(2003\)](#) Canadian experiment where response rates were significantly increased to 29.2% with a personalized mailing compared to 25.3% for nonpersonalized. Similarly, [Clark and Kaminski \(1990\)](#) demonstrated a significantly higher response rate when a handwritten cover letter rather than a typed form letter was used.

In attempting to offer an explanation as to why personalization did not increase response rate in a business context, [Neider and Sugrue \(1983\)](#) suggested that hand addressed envelopes may have been perceived as lacking in professionalism. In addition, [Helgeson \(1994\)](#) has argued that although handwritten addresses may be less likely to be thought of as junk mail, the respondent may become disappointed or irritated if the mail appear personal but is not.

Moreover, given that personalization has been found to positively influence response rates among consumer and academic populations ([Dillman & Frey 1974](#); [Matteson, 1974](#)) the non-significant findings of this study add weight to the argument that techniques that have been found to be effective among one population may not transfer to another.

Additionally, [Wunder and Wynn \(1988\)](#) conjectured that hand addressed envelopes would have a positive effect on response quality since respondents may be more likely to carefully and thoroughly complete the questionnaire. However, their research did not support this hypothesis. Likewise, in the present study no significance difference was found in response quality between hand addressed envelopes and computer-printed labels. Nonetheless, in quantitative terms, handwritten addresses resulted in more complete questionnaires with fewer missing items and longer answers to open questions. Significance notwithstanding, in practical terms in many small scale surveys the differences in levels of missing data and length of answers could be very important.

Researchers should also consider the cost and time necessary for each address condition. Handwriting addresses eliminates the need to purchase computer labels and while this may be a relatively nominal cost, as sample sizes and numbers of follow-ups increase, more labels are required and so the expense can mount up. On the debit side, hand addressing envelopes is laborious and time consuming. Although respondent addresses initially have to be inputted into a computer, a proficient typist could do so faster than it would take someone to handwrite them. A computer can also save time when providing the researcher’s address on reply envelopes where the address needs only to be

inputted once and simply copied to fill one page of labels. This page can then be printed multiple times to produce large amounts of labels in minutes. In contrast, the researcher's addresses would have to be handwritten each time. Additionally, respondent addresses can be stored in a computer and details for follow-ups can be selected and printed easily and quickly.

After investigating Research Question 2: "Does the color of the envelope influence response rate, speed and quality in mail surveys of business audiences?", no envelope color effects were found. The non-significant results with regard to the effects of envelope color are of particular importance since they contradict the findings of Little and Pressley (1980). Their study concluded that, although envelope color did not significantly influence response rate or quality, it did affect response speed in that the use of blue or yellow return envelopes over manila resulted in significantly faster replies. Similarly, the current research found no evidence to validate Erdos' (1974) unsubstantiated claim that envelopes should be white.

These findings have a practical implication with respect to survey expenditure since brown envelopes are less expensive than white. Therefore, researchers may keep costs down by using brown envelopes over white, with some confidence that this will have no detrimental effects on response rate, speed of reply or data quality.

There is a need for more research to address the lack of knowledge regarding envelope effects by testing the influence of a variety of envelope colors on response rate, speed and quality among larger samples and other populations. Indeed, the importance of the envelope in attracting attention has been recognized in direct marketing where the emphasis is on creating innovative and eye-catching designs (McLuhan, 2001). It is possible that in the present experiment, the envelope colors of brown and white were not distinctive enough to produce major differences. The use of other brighter colors such as blue, pink, green, yellow, etc., may have yielded different results. However, within the research context, the concept of employing a distinctive package to catch attention may need to be applied with caution to avoid a resemblance between a serious research request and direct mail advertising (Erdos, 1974).

Additionally, researchers have suggested that in the mail survey response process, recipient variables (such as socioeconomic status, motivation, perception, and mood) as well as survey variables affect the decision to respond (Ratneshwar & Stewart, 1989). For example, in order to understand respondent factors in the process of completing and returning surveys, Helgeson et al. (2002) have proposed an 'Attention–Intention–Completion–Return' Hierarchy of Effects Model to describe the stages of deciding to complete a mail survey. Although they hypothesized that personalization and color would have a significant positive effect on the attention stage of survey completion, they found no evidence that these variables affected any stage of the process. They concluded that as well as survey design variables respondent factors, such as attitudes towards research, have a strong influence on decisions to respond. Considering the PR practitioner respondents, it is conceivable that, by the nature of their profession, they may have been highly sensitized to persuasion strategies and thus impervious to their influence.

A further explanation for the lack of significant main effects of personalization and envelope color in the present experiment may be found in the other survey design features employed in the research (see Fig. 1). It is possible that these factors, or a combination thereof, had a strong impact on response, thereby reducing the effects of the experimental variables. Indeed, it has been found that respondent interest in the topic positively and dramatically affects response rates (Martin, 1994) and it could be argued that the highly relevant subject of the survey to PR professionals could have engaged respondents' motivation to respond and thus overridden the potential influence of personalization and envelope color. In addition, since university sponsorship has a positive influence on response (Baldauf et al., 1999; Faria & Dickinson, 1996; Fox et al., 1988; Greer & Lohtia, 1994) this factor could also have masked the potential impact of the manipulated variables.

Cognizance should also be taken of potential gatekeeper effects when researching in the business context (Clark & Kaminski, 1990). Mail may be opened by secretaries/personal assistants prior to their managers seeing it. Therefore, in some cases the impact of the outgoing envelope on the actual respondent may be lost.

Finally, the majority of research that has tested various survey design features has found no significant interaction effects between the manipulated treatments. Likewise, in answer to Research Question 3: "Are there any interaction effects between personalization and envelope color among business respondents?", the present study discovered no significant interaction effects between personalization and envelope color. However, these results diverge from Little and Pressley's (1980) finding that personalization and envelope color had a significant interaction effect on response speed.

6. Conclusion

In summary, the present study among a UK business population discovered no significant main or interaction effects between personalization and envelope color on response rate, response speed or response quality. However, in simple quantitative terms, personalization slowed response speed by one day and generated more thoroughly completed questionnaires than computer-printed labels, while brown envelopes generated a quantitatively higher number of replies and higher quality data than white envelopes.

The practical implications of these results for researchers planning to conduct mail surveys among business populations are two-fold. Firstly, it is unlikely that the effort expended to personalize mail surveys by handwriting addresses will yield considerable benefits in regards to response rate, response speed or response quality. Therefore, researchers can use the faster computer method to generate printed mailing labels. Similarly, brown envelopes that are generally less expensive than white can be used without fear of negative effects upon response rate, response speed or response quality. Moreover, the findings of this study support the argument that techniques that have been found to be effective among one population may not transfer to another.

Researchers in industrial contexts face an increasingly challenging task in persuading business practitioners to expend

their time and effort responding to mail surveys. Yet, if the aim is to measure the behavior and attitudes of these individuals an increased understanding of the most effective response inducing strategies in this environment is necessary. In particular, given the multiple-factor approach of, for example, Ratneshwar and Stewart (1989) and Helgeson et al. (2002), which emphasizes the importance of both respondent and survey variables, more research is needed to determine the interactive effects of combined response-inducement techniques. Similarly, the scope of future investigations could be broadened to typically include dependent variables such as response speed, response quality and response error as well as the ubiquitous response rate.

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