

Survey Response in the Presence of Others: An Analysis of Social Normative and Sensitive Questions

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ABSTRACT

The assurance of confidentiality in a dyad interview (private interview) is central to survey interviewing, and it is a premise of such interviewing. In reality, however, the presence of third-parties, a situational variable in the interview, is hard to avoid. Despite the mixed results found in previous studies (Blair, 1979; Hartmann, 1995), some findings were supportive of a significant third-party effect, especially those with a high degree of sensitivity and social norms (Taietz, 1962; Aquilino, 1993; Smith, 1997). Furthermore, scant attention has been paid to the in-depth nature of the presence of others. Three dimensions of the presence of others, respectively the number of others, the types of others and the duration of their presence, were examined in this study under the assumption that they would lead the respondents to under-report or to provide socially desirable answers to sensitive or social normative questions, as seen in comparison with factual questions.

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Data from a regional survey of metropolitan residents aged 20 or older in Taiwan were used. The results indicated that 50–60% of interviews carried out when third-parties were present, mostly one person. About 40% of third-parties were present all the time. Concerning personal income and sexual experience, in contrast to bias-reduced substantial responses, biased responses are more likely to occur in the interviews characterized by one to three dimensions of third-party presence. In terms of response tendency, significant third-party effects were found among substantial responses and bias-reduced substantial responses to the questions including cohabitation, extra-marital relations, abortion, unmarried women, personal income, and political-party identification. In particular, the third-party effect on biased response to personal income was consistently found significant across three dimensions of the presence of others. The present findings reconfirm the theoretical expectations for the third-party effect on response quality and response tendency to social normative and sensitive questions. They also echo what the previous studies have indicated: the situational effect varies with questions of different nature.

Keywords: response quality, response tendency, the third-party effect, the presence of third-parties, interview place

第三者在場的調查回應： 社會規範暗示性與敏感性題目的分析

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摘要

訪問調查時很重要的前提是確保訪員與受訪者進行訪談時的個人隱私。但現實中很難避免第三者在場的訪問情境。相關研究結果雖然

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分歧 (Blair, 1979; Hartmann, 1995)，一些針對高敏感與社會規範性題目的研究仍發現顯著的第三者在場效應 (Tajtelz, 1962; Aquilino, 1993; Smith, 1997)，只是從不同性質的第三者在場深入探討其對訪問回答的影響。本研究探討相較於事實性題目的回答時，三面向的第三者在場（分別是不同類型的第三者、在場人數與在場的期間）是否較容易造成受訪者被詢問敏感性及社會規範性題目時提供偏差的回答（例如：低報，社會規範的回答方向）。

研究資料來自一項針對大都會地區的調查，對象是戶籍設在台灣，年滿 20 歲的民眾。分析的結果顯示，有 50-60% 的訪問是在有第三者在場情況下進行的，在場人數多半是 1 人。約 40% 的第三者在場是持續到整個訪問結束為止。在個人收入與性經驗題目的回答中，相對於無偏差的實質回答，偏差回答較容易受到一到三個面向的第三者在場的影響。在回答傾向方面，無論是偏差回答刪除之前或之後的實質回答分布，顯著的第三者在場效應多發生在同居、婚外情、墮胎、未婚媽媽、個人收入、以及政黨支持等題目的回答，尤其個人收入的偏差回答均受到三面向第三者在場顯著的影響。本研究再次確認第三者在場對社會規範性與敏感性題目的回答品質與回答傾向之影響符合理論解釋，也呼應前人研究的提示，情境效應會因問卷題目的性質不同而有差異。

關鍵字：回答品質、回答傾向、第三者在場效應、第三者在場、訪問地點

I. Introduction

The third-party effect¹ is defined as the presence of others during an interview which may undermine a respondent's willingness to provide true

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1. The third-party effect is also called the third-person effect or the effect of the presence of others, meaning that the presence of the third persons in addition to the interviewer and the respondent in survey interview would influence the respondent's actual response.

answers. Such an effect can be explained by the simultaneous two-track response process, “the spiral of silence” in mass communication, conformity and acquiescence in social psychology, and interview situation in environmental psychology. According to Cannell, Miller and Oksenberg (1981), the respondents may go through two question-answering processes simultaneously. Ideally, the respondents would need to comprehend the survey question first, then collect and assess the information prepared for the answer. After evaluating whether the attempting answer is accurate or satisfactory, the respondents would decide or edit the answer.

Nevertheless, the cues from interview situations in terms of interviewer appearance and behavior, respondent’s attitudes, question order, and the presence of others in any stage of the question-answering process may change the respondent’s mind and modify his/her final answer (Cannell et al., 1981; Dijkstra and van der Zouwen, 1978; 1982). The third-person effect mostly appears in the final stage of editing a response. The edited response may be an inadequate response to avoid the invasion of privacy or a distorted response to the question with a high degree of social desirability and sensitivity (Tourangeau, Rips, and Rasinski, 2000).

“Spiral of silence” in the formation of public opinion emphasizes that individuals usually search for support from the majority of others, mostly due to their fear of being socially isolated (Noelle-Neumann, 1974). In the interview situation with the presence of the third parties, people tend to hold their own attitudes back to match the dominant opinions in order to maintain psychological closeness with the majority of others (McDonald et al., 2001; Petric and Pinter, 2002). As stable forms of public opinion are derived from customs and tradition (Noelle-Neumann, 1974), the spiral of silence may only work for opinions with a moral or normative component

(Scheufele and Moy, 2000). Therefore, when asked by the interviewer, the respondent is inclined to conceal his/her real attitudes toward the issues with a high level of normative standard by way of providing non-substantial responses including refusal to respond, "don't know" or biased responses such as conformity, acquiescence and under/overreporting.

Most of the empirical studies have shown that question characteristics differentiate the significance of the third-party effect on response quality indicated by non-substantial responses and response tendency (Aquilino, 1993; Smith, 1997). With regard to non-substantial response, refusals and missing information were found likely to increase with the presence of adults when the questions are concerned with personal income, sexuality and the attitudes toward AIDS (Blair, 1979; Hartmann, 1994; 1995). There was, however, no statistically significant effect on the validity of responses to factual questions (e.g., the place of birth) (Taietz, 1962; Tu, 2001) or the questions about incomes, pre-marital relationships, and extra-marital relationships (Tu, 2001).

Concerning response tendency, although some studies indicated that the presence of others including spouse does not significantly differentiate response tendency across the types of questions (Blair, 1979; Pollner and Adams, 1997), different types of third-party were mostly found to significantly influence the attitudes toward family, gender-roles, marital relations, sexual relations, health status, voting, and income (Aquilino, 1993; 1997; Silver, Abramson, and Anderson, 1986; Smith, 1997; Taietz, 1962; Tu, 2001). The elderly were likely to display traditional attitudes toward family values when adult children are present but modern attitudes when spouse is present (Taietz, 1962). The presence of spouse increases conservative attitudes toward marital relations (Aquilino, 1993) and reported spouse's time in housework but decreases reported self-time in housework

(Aquilino, 1993). Greater support for traditional attitudes toward gender roles and extra-marital relationships was also found when children or adults were present in the interview with adults (Tu, 2001). The presence of spouse tends to increase agreement between husbands and wives on class identification, party affiliation, economic liberalism, and the division of household labor (Zipp and Toth, 2002).

The presence of children was found to diminish the respondent's willingness to admit that they or their friends had used marijuana (Bradburn and Sudman, 1979). There was more report on illicit drug use when spouse was present but less report on drug use when adults other than spouse, especially parents, were present (Aquilino, 1997). When someone else was present in the interview, the respondents were less positive to their health status (Smith, 1997). Wives were likely to answer that they are not deprived when adults were present, while husbands tend to give an opposite response (Cantillon and Newman, 2005). The presence of others, either adults or children, would lead the respondent to underreport his/her personal incomes (Tu, 2001). There was, however, no significant tendency to overreport the participation in voting when adults or the elder were present during the interview (Silver et al., 1986).

The third-party effect was found to increase the possibility of response being bias or non-substantial. The divergent findings still appeared. More theoretical explanations may be needed. Hinted by environmental psychology, physical environment affects humans through four stages of the cognition/response process: interpretation (active-cognition), evaluation (reactive-cognition), operation (active-behavior), and response (reactive-behavior) (Argyle, Furnham, and Graham, 1981). The presence of others in terms of personal and impersonal effects is worthy to examine. In addition

to the types of others mostly examined in the previous studies, other dimensions associated with the presence of others, especially in the physical or situational terms, thus may also need to be explored. Concerning the importance of privacy in the interview, the ways in which the place of interview, the number of third-persons, and the duration of third-persons present are considered as the important personal and impersonal factors.

While several previous studies have shown mixed results on the types of others, relatively scant attention has been paid to the ways in which other situational variables associated with the presence of others have independent or confounding effects on survey response. After background variables were controlled, the number of others present has no significant effect on the responses to 13 questions about child values, sexual matters, religion, health status, and trust (Smith, 1997). As the third parties are probably not present all the time, some may leave before the interview is finished (Blair, 1979). Aquilino (1993) indicated that the effect of “spouse present all the time” was consistently more significant than that of “spouse present some of the time”. The duration of the others present was, however, found to have no significant effect (Pollner and Adams, 1997). The study of reported drug use among adolescent respondents revealed significant differences in the responses given at home and at school (Zanes and Matsoukas, 1979). Furthermore, the chances of the presence of spouse may increase with the duration of interview and being interviewed by female interviewers (Hartmann, 1994).

This paper aims to fill the gap in the literature by presenting an in-depth investigation of the third-party effect on response quality and response tendency rarely examined in the previous studies. First, in addition to non-substantial response mostly explored in the literature, biased response is taken into account in the examination of response quality. Sec-

ond, response tendency is examined in terms of substantial response excluding non-substantial response only as well as bias-reduced substantial response excluding not only non-substantial but also biased response. Third, in addition to the types of others, the number of others, the duration of others present, and the place of interview are also investigated. Finally, the third-person effect is examined through comparing the questions of different nature. Particular attention is paid to the questions with a high degree of sensitivity and social norms under the assumption that the presence of others would lead to the underreporting or socially desirable answers.

Non-substantial response, biased response, and conservative response to moral and sensitive questions are assumed to increase with the number of others, the duration of others present, and the presence of children or spouse. In other words, more third-parties present, the presence of children or spouse, all-the-time presence of third-persons, and interview taking place at home would direct the respondent to be reluctant to answer or provide true answer, express more conservative attitudes, and underreport when s/he is asked about sensitive questions such as income, sexual behaviors and political issues. The patterns of the third-party effect on both substantial response and bias-reduced substantial response would be similar, but the latter would be more significant under the assumption that the deletion of the bias response would increase covariation between independent variables and the dependent variable.

II. Data and Measures

The data analyzed in this paper are from a survey funded by the National Science Council in 2001. The items used in this survey for the

third-party effect include background information, religion, the attitudes toward gender roles, gender relation, and marriage, and sensitive questions such as political party, income and sexual partners and behaviors. 596 metropolitan residents (in Taipei city, Taipei county, and Jilong city) aged 20 or more were randomly selected based on a stratified sampling scheme. 269 interviews were completed by 10 interviewers aged from 20 to 50 (average is 35.8), mostly with college education (80%), married (65.8%) and female (88.1%).² 51.7% of the respondents were male and 65% of them were married. The average of age and schooling years was 40 and 12 respectively. 82.2 % of the respondents were Minnan, the majority among the different Chinese sub-ethnicities in Taiwan, i.e. descendants of migrants from Fujian in China but resident in Taiwan for many generations. The other 17.8% of the respondents were from other Chinese sub-ethnic groups in Taiwan, but not significantly different in other aspects.

The examination of response quality and response tendency to eleven questions including religion, attitudes toward marriage, political party, income, and sexual behaviors, representing factual, socially normative, and sensitive questions was the main focus of the exploration of the third-party effect. Religion is simply asking the respondent “what is your religion?” Five questions concerning the attitudes toward marriage ask the respondent whether s/he strongly approves, approves, is undecided,³ disapproves or strongly disapproves with cohabitation, extra-marital relations, homosexual relations, being an unmarried mother, and abortion, respec-

2. Each interviewer completed eight to 42 interviews with an average of 28.5. After 53 illegible cases were excluded according to AAPOR Standard Definitions, the response rate is 49.54%.

3. In interviewer training course, undecided is defined as neutral attitudes.

tively. Among the remaining five sensitive questions, the answer to personal income per month was originally in 20 categories but was transformed into a continuous variable using the midpoint of each category. The responses to three questions: (1) the age of the first sexual intercourse, (2) the number of sexual partners, and (3) the frequency of browsing pornographic websites were regrouped into two categories meaning whether or not the respondent has had sexual experience, had two or more sexual partners,⁴ and browsed pornographic websites (Appendix A)

Concerning political party identification, the respondents were asked which party they support. There were eight response categories including six parties, not certain, and other but regrouped into “no preference”,⁵ “pan-blue” and “pan-green”. The latter two groups represent political ideology in Taiwan, respectively in favor of union with China, or in favor of Taiwan independence. These two monikers encompass the polarization between the “blues”, the Kuomintang (KMT), which ruled Taiwan for 55 years, and the “greens”, the Democratic Progressive Party, which was elected in 2000 in the second popular presidential election. Both parties have spawned splinter parties labeled “pan-blue” or “pan-green” (Appendix A).

Response quality is assessed with whether the response is non-substantial, bias, or bias-reduced substantial. Non-substantial response is defined as “don’t understand the question”, “don’t know the answer”, “don’t remember the answer”, “don’t have any opinion”, and “refuse to answer”, while biased response as the tendency to underreport, overreport,

4. Having had two sexual partners is considered to be a crucial distinction in reality, given that experience with one sexual partner in the modern world is common.

5. No preference here stands for neutral standpoint.

conform with others, or conform with public opinion judged by the interviewers. Response tendency was examined by two measures. The first one is substantial response referring to the distribution of actual response to each of eleven questions after non-substantial responses were excluded. The second one is bias-reduced substantial response, which is the distribution of substantial response after biased response was further excluded. In the final analysis, reference group of response quality is the status of being a bias-reduced substantial response. The reference groups for categorized response tendency are no religion, no party preference, no sexual experience, one sexual partner, and no pornographic web browsing respectively.

Biased response was collected by interviewers according to their observation of the respondent's attitudes and behaviors in response to all the questions during the interview. The interviewers were requested to record whether the response should be biased at the same time they record the respondent's answer to each question. A special training session was designed for the interviewers to learn how to observe the respondent's attitudes and behaviors, come to their conclusion on response bias, and then record the results of their observation. The observation rules and the pre-designed codes for the interviewers to follow and record were clearly defined. The clues to the subjective evaluation included the respondent's gestures, manner, facial expression, eye-contact, attitudes, the tone of voice, and the signs of uneasiness which may threaten the validity of a response. Pre-designed codes for the interviewers to efficiently document different kinds of biased response were based on the abbreviations including "C", "in", "K", "S3", and "Ss", respectively standing for proxy refusal/response, underreporting, overreporting, conformity with others, and conformity with the public. The abbreviations simply follow the pronunciation

of those letters close to the meaning of the five biased responses.⁶

Ideally, the reliability of interviewer observation can be obtained by using multiple interviewers to evaluate the same respondent so that the researcher can check interobserver reliability (Shavelson and Webb, 1991). The present study is not perfectly designed, mostly due to the use of single observer, which causes the validity of the observations being more dependent on the interviewers' judgment. In order to control such an interviewer effect, three strategies were employed. First, in the training course, the interviewers were provided sufficient time to practice the observation procedure and techniques for the whole interview. In addition, interviewers were requested to practice how to evaluate the same responses, cross-check others' observations, and then discuss the differences in observations from multiple observers.

Second, the validity of observation data was also examined by comparing the observations on similar respondents among respondents and interviewers with different characteristics. The results of comparison in this study were quite similar to the theoretical expectation that the male respondents were likely to show conformity to social norms and underreport in response to sexual related issues (not shown in Tables). Those who were never married or whose education is higher than senior high school would tend to underreport their sexual experience, sexual partner, browsing pornographic websites, and/or party identification. On the other hand,

6. Actually, in order to lessen the interviewer workload in response recording, non-substantial responses were also documented by using abbreviations in Chinese representing "don't know", "don't understand", "don't remember", "no opinion", and "refusal" respectively. Basically, the abbreviations put on the questionnaire at the end of each question; and they could be made as multiple indicators.

there seems to be a systematic bias between the interviewers with different marital status and education. Unmarried interviewers tend to find response bias across social normative, sexual, and other sensitive items. The interviewers with college education tend to judge the respondents as demonstrating conformity to social norms, while those with senior-high education tend to find the respondents underreport their sexual experience. Third, Hierarchical Linear Model (HLM, also called Multilevel Regression Model) is able to consider the possible errors derived from interviewers with different personal characteristics and thus used in this study to control deviant observations between interviewers.

The information about the presence of others including the types of others, the number of others, and the duration of others present, and the place of interview were collected from an observational table for interviewers to record during the interview from the first session to the sixth session in the questionnaires.⁷ The observation data based on the eleven questions for the present study are located in the first, the second, and the fifth sessions. What the interviewer needs to record is according to the following questions: Was any other present when the questions? Who were they, respectively? How long were they present, all the time, most of the time, about half of the time, or some of the time? Where did the interview take place, the respondent's home, the respondent's workplace, the respon-

7. There are six topics in the questionnaires, respectively (1) background information, (2) gender relations, (3) time use, (4) attitudes toward different aspects of life, (5) sensitive questions, and (6) the evaluation of questionnaires and interviews. The observational table designed for evaluating the interview situation was based on the suggestions from a focus group of five adults utilized as a pretest. The documentation of the presence of others was attached to six topics, which in other words implies interview situation in time-consecutive sense from the beginning to the end of the interview.

dent's school, others' home, or other place?

In the final analysis, the number of others present at the first, the second, and the fifth sessions was respectively regrouped into three categories: none, one, two, and three or more. The types of others were reclassified into five categories: none, children alone, spouse alone, spouse plus others, and others. The duration of others present was regrouped into three categories: all the time, part of the time, and no presence, while the place of interview was regrouped into the respondent's home and other places. The reference groups are no presence of others for three dimensions of the third-person presence and the place other than the respondent's home.

Control variables in the multivariate analysis are respondent characteristics including gender, education, age, marital status, and ethnicity and interviewer characteristics including gender and marital status. Descriptive statistics are shown in Appendix A. Both education and age are measured in year. The reference group is male, unmarried, and Minnanese. As discussed earlier, the interviewer's evaluation of biased response is fully subjective and may result in another source of response bias, namely interviewer bias. The multivariate analysis, which is able to recognize interviewer effect and control interviewer bias is necessary. It is especially important for response quality and response tendency of sensitive questions, which are more likely than other types of questions to significantly vary with interviewers. HLM was, therefore, employed in the present study.

Three dimensions of third-party presence were found highly correlated with each other. Coefficients are around 0.7 to 0.8. The correlations for the fifth session when sensitive questions were asked were higher than those for the first and the second sessions. The correlations of the number of others with the duration of presence are the highest across sessions, followed by

those of the duration of presence with the types of others (children, spouse, and spouse with others). The correlations of the number of others with the types of others are the lowest. The present study thus separately examines each dimension along with interview place using three Multilevel Regression Models for response quality and the distributions of substantial response and bias-reduced substantial response to each question. The idea of separate examination is similar to what Smith (1997: 42) did in his study.

III. Results

This study first presents a description of the presence of others during the interview then the third-party effects on response quality as well as two kinds of response tendency, respectively substantial response and bias-reduced substantial response.

A. Profile of the Third-parties

58.4% of the interviews were conducted in the presence of the third parties when factual questions are asked in the first session of the questionnaires (Table 1). The percentage of third-party presence declines in the second session and further in the fifth session. Such a decrease implies that not all the third persons were present all the time during the whole interview. No presence of third party is the mostly common situation across three sessions (41.6% to 51.7%), similar to those found in the previous studies in Ireland, Australia and America (Silver et al., 1986; Zipp and Toth, 2002; Zipp, Prohaska, and Bemiller, 2004) but lower than that found by Silver et al. (1986) and Smith (1997). The presences of children alone, spouse alone, and spouse plus others are from 8% to 11.2%. It is good to know

Table 1 The description of the presence of others and interview place (269)

Interview Situation	Factual questions (1 st session)	Social normative questions (2 nd session)	Sensitive questions (5 th session)
<i>The presence of others</i>			
1. Presence (%)	58.4	52.0	48.3
2. Types of others (%)			
None ¹	41.6	48.0	51.7
Children alone	11.2	10.0	8.2
Spouse alone	8.2	8.2	7.4
Spouse+others	11.2	9.3	9.7
Others	27.9	24.5	23.0
Total percentage	100	100	100
3. No. of others (%)			
None ¹	41.6	48.0	51.7
1	30.5	28.6	23.8
2	17.1	14.1	14.1
3 or more	10.8	9.3	10.4
Total percentage	100	100	100
4. Duration of presence (%)			
None ¹	41.6	48.0	51.7
Part of the time	12.3	9.3	6.3
All the time	46.1	42.7	42.0
Total percentage	100	100	100
<i>Interview Place (%)</i>			
Home ¹		75.5	
Workplace/school		10.8	
Others ²		13.7	
Total percentage		100.0	

1. Reference group. The rest of categories are dummy variables in the final analysis except only one dummy variable for interview place because two categories other than home were intergrated.
2. Others include other's home, bookstore, park, coffee shop, restaurant, community center, at the door or along the road near the respondent's home, and a lobby in a building.

that no presence becomes more common than that in the survey conducted in Taiwan in 1996 (Tu, 2001).

Across three sessions, the presence of one third-person is about one third, followed by two and then three or more third parties. It is similar to Smith's findings that the highest percentage of the interviews (27.9%) occurred when one third-person present (Smith, 1997). The percentage of the presence of two third-persons (14.1%–17.1%), however, is higher than that found in Smith's study (6.5%). Furthermore, more than 40% of the interviews across three sessions were conducted when the third-persons were present all the time. Finally, three quarters of interviews took place at the respondent's home.

B. Third-party Effects on Response Quality

Multilevel Multinomial Regression Model is to determine the probability of a response to each of eleven questions being non-substantial or biased in contrast with being bias-reduced substantial.⁸ In contrast to bias-reduced substantial response, no significant third-party effects on the occurrence of non-substantial response to all the questions and those of biased response to religion, five social normative questions, and party identification were found thus not shown in Table 2. Therefore, Table 2 only presents the significant third-person effects on the probability of having a biased response to sensitive questions including personal income, sexual experience, and pornographic websites browsing.

Compared with bias-reduced substantial response, the interviews in

8. See the definition of non-substantial response, biased response, and bias-reduced substantial response in the section of data and measures on page 5.

Table 2 Multilevel Multinomial Regression Models of Third-party Effects on Response Quality: Biased Response¹

	log [prob(biased response)/prob(bias-reduced substantial response)]			
	Personal Income	Sexual Experience	Sexual Partner	Pornographic Websites
	β (s.e.)	β (s.e.)	β (s.e.)	β (s.e.)
<i>Respondent Sex (male)</i> ²	1.9097(0.546)*	—	—	-1.446(0.677)*
<i>No. of Persons (zero)</i> ²				
One	2.056(0.663)**	—	—	—
Two	1.406(0.814) [†]	1.237(0.625)*	—	—
Three or more	1.849(0.856)*	—	—	—
<i>Interview Place (else)</i> ²	-1.062(0.608)*	-0.908(0.494) [†]	-1.179(0.553)*	—
Random effect ³	**	***	—	***
<i>Respondent Sex (male)</i> ²	1.229(0.552)*	—	—	-1.497(0.680)*
<i>Duration of presence (none)</i> ²				
All the time	1.959(0.643)**	—	—	—
Part of the time	—	—	—	—
<i>Interview Place (else)</i> ²	-1.071(0.604) [†]	-0.892(0.484) [†]	-1.139(0.547)*	—
Random effect ³	**	***	*	***
<i>Respondent Sex (male)</i> ²	1.117(0.588) [†]	—	—	-1.533(0.721)*
<i>Types of Others (none)</i> ²				
Children alone	2.117(0.899)*	—	—	—
Spouse alone	2.716(0.823)***	—	—	—
Spouse+Others	2.329(0.807)**	—	—	—
Others	—	—	—	—
<i>Interview Place (else)</i> ²	-1.263(0.655) [†]	-0.915(0.510) [†]	-1.071(0.562) [†]	—
Random effect ³	—	***	—	***

1. This table does not show the effects of control variables including gender, age, marital status, education, and ethnicity. The reference group of response quality is bias-reduced substantial response. 2. Reference group. 3. Random variation between interviewers. 4. [†]: <0.1, *: <0.05, **: <0.01, *** = <0.001. 5. N=269.

QUESTIONS:

In the previous year, what is your personal monthly income? The response categories are 1. none 2. less than 10,000NTD, 3. 10,000-19,999, 4. 20,000-29,999, 5. 30,000-39,999, 6. 40,000-49,999, 7. 50,000-59,999, 8. 60,000-69,999, 9. 70,000-79,999, 10. 80,000-89,999, 11. 90,000-99,999, 12. 100,000-109,999, 13. 110,000-119,999, 13. 120,000-129,999, 14. 130,000-139,999, 15. 140,000-149,999, 16. 150,000-159,999, 17. 160,000-169,999, 18. 170,000-179,999, 19.,180,000-189,999, 20. 190,000-200,000, 21. 200,000 and more. (Personal Income).

At what age did you have your first sexual intercourse? (Sexual Experience).

How many sexual partners did you have over the past year? (Sexual Partner).

How long have you browsed pornographic websites? None, only once or twice, once or twice in a month, once or twice in a week, twice or more in a week (Pornographic Websites).

the presence of one or more third-persons were more likely than those with no third-person present to produce biased responses to the questions about sexual experience or personal income questions (at the 0.05 significance level). Third-person present all the time is more likely than no presence at all time to produce a biased response to personal income. In comparison with the absence of others, the response to personal income was likely to be biased when the interview was conducted under the presence of children alone, spouse alone, or spouse and others (at the 0.05 significance level). Furthermore, the responses to personal income, sexual experience, and the number of sexual partners in the past year were less likely to be biased when the interview took place at the respondent's home in contrast to other places. In addition, female respondents are more likely to give a biased response to personal income but less likely to provide a biased response to pornographic website browsing. Since the response quality is possibly associated with interviewer effect, this study also examines interviewer gender and marital status in the multilevel models, but no significant effects were found and not shown in Tables.

C. Third-party Effects on Response Tendency

The distributions of two kinds of substantial responses to eleven questions were also analyzed using Multilevel Regression Models for continuous, categorical, and ordinal variables at the interval, nominal and ordinal measurement levels. More explicitly, Multilevel linear regression is used for the response to personal incomes, while Multilevel ordinal regression for the responses to attitudes toward cohabitation, extra-marital relationships, homosexuality, abortion, and unmarried mothers. The responses to sexual experience and sexual partners were binary and thus examined by Multilevel logistic regression. Multilevel multinomial regression is used to analyze the multi-categorical responses to religion and the support of political parties.

The results of the third-person effects on substantial response and bias-reduced substantial response are shown in Table 3 and Table 4 respectively. With regard to substantial response, there were no significant third-person effects on the answers to religion, the attitudes toward unmarried mother and cohabitation, and the sensitive questions about sexual experience, sexual partner, and pornographic web browsing (Table 3). The approval of extra-marital relationships was likely to decrease with the presence of children alone (at the 0.05 significance level). The respondents interviewed when three or more third-persons present were less likely than those without the presence of others to support the idea of abortion (at the 0.05 significance level). The presence of two third-persons was more likely than no third-person present to produce underreporting personal incomes. The duration of the presence of others exerted no significant effect on the responses to all types of questions.

Table 3 Multilevel Regression Models of Third-party Effects on Response Tendency: Substantial Response¹

	Religion ⁴	Cohabitation ³	Extra-marital relations ³	Abortion ³	Unmarried Mother ³
	β (s.e.)	β (s.e.)	β (s.e.)	β (s.e.)	β (s.e.)
Respondent sex (male)²		-0.796(0.245)**	-0.685(0.283)*	—	—
No. of Persons (zero)²					
One	—	-0.524(0.284)†	—	—	—
Two	—	—	—	—	—
Three or more	—	—	—	-1.168(0.433)**	—
Interview Place (else)²					
Interview Place (else) ²	—	—	—	-0.482(0.287)†	-0.549(0.279)*
Random effect ⁵	—	—	***	—	*
Respondent sex (male)²					
Respondent sex (male) ²	—	-0.803(0.245)**	-0.714(0.283)*	—	—
Duration of presence (none)²					
Duration of presence (none) ²	—	—	—	—	—
All the time	—	—	—	—	—
Part of the time	—	—	—	—	—
Interview Place (else)²					
Interview Place (else) ²	—	—	—	—	-0.535(0.280)†
Random effect ⁵	—	—	***	—	—
Respondent sex (male)²					
Respondent sex (male) ²	—	-0.818(0.247)**	-0.656(0.286)*	—	—

Table 3 Multilevel Regression Models of Third-party Effects on Response Tendency: Substantial Response¹ (continued)

	Religion ⁴	Cohabitation ³	Extra-marital relations ³	Abortion ³	Unmarried Mother ³
	β (s.e.)	β (s.e.)	β (s.e.)	β (s.e.)	β (s.e.)
Types of Others (none)²					
Children alone	—	—	-0.996(0.471)*	—	—
Spouse alone	—	-0.889(0.476) [†]	—	—	—
Spouse + Others	—	—	—	—	—
Others	—	—	—	—	—
Interview Place (else)²	—	—	—	—	—
Random effect ⁵	—	—	***	†	—

1. This table does not show the effects of control variables including gender, age, marital status, education, and ethnicity. 2. reference group. 3. ordinal regression. 4. multinomial regression. 5. Random variation between interviewers. 6. †: <0.1, *: <0.05, **: <0.01, ***=<0.001. 7. N=269.

QUESTIONS: Do you approve or disapprove of cohabitation? Strongly disapprove, disapprove, undecided, approve or strongly approve (Cohabitation).

Do you approve or disapprove of extra-marital relations? Strongly disapprove, disapprove, undecided, approve or strongly approve (Extra-marital relations).

Do you approve or disapprove of abortion? Strongly disagree, disagree, undecided, agree or strongly agree (Abortion).

Do you approve or disapprove of unmarried mother? Strongly disapprove, disapprove, undecided, approve or strongly approve (Unmarried mother).

Table 3 Multilevel Regression Models of Third-party Effects on Response Tendency: Substantial Response¹ (continued)

	Personal Income	Sexual Experience ³	Sexual Partner ³	Party Identification ⁴	Pornographic website ³
	β (s.e.)	β (s.e.)	β (s.e.)	(Pan-green) β (s.e.)	β (s.e.)
Respondent sex (male)²	-1359(3626)***	-0.755(0.385)*	-1.769(0.869)*	-0.616(0.358) [†]	-1.423(0.397)***
No. of Persons (zero)²					
One	—	—	—	—	—
Two	-1240(5361)*	—	—	—	—
Three or more	—	—	—	—	—
Interview Place (else)²					
Random effect ⁵	—	—	—	***	—
Respondent sex (male)²	-1373(3643)***	-0.736(0.383) [†]	-1.795(0.871)*	-0.662(0.362) [†]	-1.497(0.401)***
Duration of presence (none)²					
All the time	-6023(3770) [†]	—	—	—	—
Part of the time	—	—	—	—	—
Interview Place (else)²					
Random effect ⁵	—	—	—	***	—
Respondent sex (male)²	-1323(3772)***	—	—	-0.645(0.379) [†]	-1.376(0.405)***

Table 3 Multilevel Regression Models of Third-party Effects on Response Tendency: Substantial Response¹ (continued)

	Personal Income	Sexual Experience ³	Sexual Partner ³	Party Identification ⁴	Pornographic website ³
	β (s.e.)	β (s.e.)	β (s.e.)	(Pan-green) β (s.e.)	β (s.e.)
Types of Others (none)²					
Children alone	—	—	—	—	—
Spouse alone	—	—	—	0.995(0.591) [†]	—
Spouse + Others	—	—	—	—	—
Others	—	—	—	—	—
Interview Place (else)²	—	—	—	-1.054(0.511)*	—
Random effect ⁵	—	—	—	***	—

1. This table does not show the effects of control variables including gender, age, marital status, education, and ethnicity. 2. reference group. 3. logistic regression. 4. multinomial regression. 5. Random variation between interviewers. 6. [†]: <0.1, * : <0.05, ** : <0.01, *** = <0.001. 7. N=269.

QUESTIONS: In the previous year, what is your personal monthly income? 1. none 2. less than 10,000NTD, 3. 10,000–19,999, 4. 20,000–29,999, 5. 30,000–39,999, 6. 40,000–49,999, 7. 50,000–59,999, 8. 60,000–69,999, 9. 70,000–79,999, 10. 80,000–89,999, 11. 90,000–99,999, 12. 100,000–109,999, 13. 110,000–119,999, 13. 120,000–129,999, 14. 130,000–139,999, 15. 140,000–149,999, 16. 150,000–159,999, 17. 160,000–169,999, 18. 170,000–179,999, 19., 180,000–189,999, 20. 190,000–200,000, 21. 200,000 and more. (Personal Income).

At what age did you have your first sexual intercourse? (Sexual Experience)

How many sexual partners did you have over the past year? (Sexual Partner)

Which party do you support? KMT, DPP, New Party, Taiwan Solidarity Union, People First Party, Green Party, not certain (Party Identification).

How long have you browsed pornographic websites? None, only once or twice, once or twice in a month, once or twice in a week, twice or more in a week (Pornographic Websites).

Table 4 Multilevel Regression Models of Third-party Effects on Response Tendency: Bias Reduced Substantial Response¹

	Religion ⁴	Cohabitation ³	Extra-marital relations ³	Abortion ³	Unmarried Mother ³
	β (s.e.)	β (s.e.)	β (s.e.)	β (s.e.)	β (s.e.)
Respondent sex (male)²	—	-0.799(0.248)**	-0.685(0.284)*	—	—
No. of Persons (zero)²	—	-0.582(0.290)*	—	—	—
One	—	—	—	—	—
Two	—	—	—	-1.184(0.439)**	—
Three or more	—	—	—	—	—
Interview Place (else)²	—	—	—	—	-0.517(0.281)†
Random effect ⁵	—	—	—	—	†
Respondent sex (male)²	—	-0.805(0.248)**	-0.718(0.284)*	—	—
Duration of presence (none)²	—	-0.458(0.256)†	—	—	—
All the time	—	—	—	—	—
Part of the time	—	—	—	—	—
Interview Place (else)²	—	—	—	—	-0.503(0.282)†
Random effect ⁵	—	—	***	—	—
Respondent sex (male)²	—	-0.801(0.251)**	-0.647(0.288)*	—	—

Table 4 Multilevel Regression Models of Third-party Effects on Response Tendency: Bias Reduced Substantial Response¹ (continued)

	Religion ⁴	Cohabitation ³	Extra-marital relations ³	Abortion ³	Unmarried Mother ³
	β (s.e.)	β (s.e.)	β (s.e.)	β (s.e.)	β (s.e.)
Types of Others (none)²					
Children alone	—	—	-1.018(0.479)*	—	—
Spouse alone	—	-0.908(0.491) [†]	—	—	—
Spouse + Others	—	—	—	—	—
Others	—	—	—	—	—
Interview Place (else)²	—	—	—	—	—
Random effect ⁵	—	—	***	—	—

1. This table does not show the effects of control variables including gender, age, marital status, education, and ethnicity. 2. reference group. 3. ordinal regression. 4. multinomial regression. 5. Random variation between interviewers. 6. †: <0.1, *: <0.05, **: <0.01, *** = <0.001. 7. N=269.

QUESTIONS: Do you approve or disapprove of cohabitation? Strongly disapprove, disapprove, undecided, approve or strongly approve (Cohabitation).

Do you approve or disapprove of extra-marital relations? Strongly disapprove, disapprove, undecided, approve or strongly approve (Extra-marital relations).

Do you approve or disapprove of abortion? Strongly disagree, disagree, undecided, agree or strongly agree (Abortion).

Do you approve or disapprove of unmarried mother? Strongly disapprove, disapprove, undecided, approve or strongly approve (Unmarried mother).

Table 4 Multilevel Regression Models of Third-party Effects on Response Tendency: Bias Reduced Substantial Response¹ (continued)

	Personal Income	Sexual Experience ³	Sexual Partner ³	Party Identification ⁴	Pornographic website ³
	β (s.e.)	β (s.e.)	β (s.e.)	Pan-green β (s.e.)	β (s.e.)
Respondent sex (male)²	-1389(3813)**	-0.997(0.468)*	-1.216(0.541)*	-0.617(0.363) [†]	-1.395(0.416)***
No. of Persons(zero)²					
One	—	—	—	—	—
Two	-1131(2989)***	—	—	—	—
Three or more	—	—	—	—	—
Interview Place (else)²					
Interview place	—	—	—	-1.014(0.498)*	—
Random effect⁵	—	—	—	***	—
Respondent sex (male)²	-1409(3826)***	-1.013(0.467)*	-1.216(0.548)*	-0.656(0.367) [†]	-1.395(0.416)***
Duration of presence (none)²					
All the time	-4556(2398) [†]	—	—	—	—
Part of the time	—	—	—	—	—
Interview Place (else)²					
Interview place	—	—	—	-1.088(0.497)*	—
Random effect⁵	—	—	—	***	—
Respondent sex (male)²	-1372(3952)***	-1.250(0.474)*	-1.761(0.874)*	-0.640(0.384) [†]	-1.351(0.422)**

Table 4 Multilevel Regression Models of Third-party Effects on Response Tendency: Bias Reduced Substantial Response¹ (continued)

	Personal Income	Sexual Experience ³	Sexual Partner ³	Party Identification ⁴	Pornographic website ³
	β (s.e.)	β (s.e.)	β (s.e.)	Pan-green β (s.e.)	β (s.e.)
Types of Others (none)²					
Children alone	—	—	—	—	—
Spouse alone	—	—	—	—	—
Spouse + Others	—	—	—	—	—
Others	—	—	—	—	—
Interview Place (else)²	—	—	—	-0.907(0.517)*	—
Random effect ⁵	—	—	—	***	—

1. This table does not show the effects of control variables including gender, age, marital status, education, and ethnicity. 2. reference group. 3. logistic regression. 4. multinomial regression. 5. Random variation between interviewers. 6. †: <0.1, *: <0.05, **: <0.01, *** = <0.001. 7. N=269.

QUESTIONS: In the previous year, what is your personal monthly income? 1. none 2. less than 10,000NTD, 3. 10,000–19,999, 4. 20,000–29,999, 5. 30,000–39,999, 6. 40,000–49,999, 7. 50,000–59,999, 8. 60,000–69,999, 9. 70,000–79,999, 10. 80,000–89,999, 11. 90,000–99,999, 12. 100,000–109,999, 13. 110,000–119,999, 13. 120,000–129,999, 14. 130,000–139,999, 15. 140,000–149,999, 16. 150,000–159,999, 17. 160,000–169,999, 18. 170,000–179,999, 19., 180,000–189,999, 20. 190,000–200,000, 21. 200,000 and more. (Personal Income).

At what age did you have your first sexual intercourse? (Sexual Experience)

How many sexual partners did you have over the past year? (Sexual Partner)

Which party do you support? KMT, DPP, New Party, Taiwan Solidarity Union, People First Party, Green Party, not certain (Party Identification).

How long have you browsed pornographic websites? None, only once or twice, once or twice in a month, once or twice in a week, twice or more in a week (Pornographic Websites).

Interview place played an important role in explaining respondents' attitudes toward unmarried mothers as well as identification with political party. The respondents interviewed at their own home were less likely than their counterparts interviewed at other places to approve of unmarried mothers and identify with pan-green parties in contrast to no political-party preference. The findings concerning the interview-place effect suggest that the respondents interviewed outside their home would have much more liberal views. We can envisage that this is mostly because private matters, like one's sex life, are hardly discussed at home, where the presence of the household members is common in our culture. Furthermore, it is common in Taiwan that the attitudes toward preference of political party for many of the household members often diverge, especially during general elections. In addition, respondent sex is significantly associated with substantial response to the attitudes toward cohabitation and extra-marriage and five sensitive questions. Women are less likely to approve of cohabitation and extra-marriage, to answer that they had sexual experience, to have two or more sexual partners, to browse pornographic websites, and to identify with pan-green parties.

Similar patterns of third-person effects on bias-reduced substantial response were found (Table 4). The effects which turned much more significant after deleting biased responses were the effects of (1) the number of others on the attitudes toward cohabitation and personal incomes, (2) the duration of presence on the attitudes toward cohabitation, and (3) the types of others on party identification. For the effects with increased statistical significance, the respondents in the presence of one third-person were more likely than those with no one else present to disapprove of cohabitation (at the 0.05 significance level). The respondents who were interviewed

when two third-persons are present tended to underreport their own incomes. In addition to the reason discussed earlier, the increment in statistical significance may also come from the increase of variation in responses after the exclusion of the respondents who provided socially approved answers mostly in terms of disapproval instead of strong disapproval, that is, those with mild opinion but tendency to hold liberal attitudes.

IV. Conclusion and Suggestions

While many of the previous studies on the third-person effect have put focused on the presence of different types of third-persons (mostly spousal presence) and relatively neglected taking interview place into account, the present study has tried to also investigate other dimensions of the third-party presence associated with survey responses encompassing different kinds of questions. The distinguishing feature in this study is the use of observational records based on the in-depth evaluation of interview situations and the respondent's response behavior. This feature not only makes the confirmation of response bias possible but also allows the third-party effect associated with three dimensions examined more in-depth. The examination of response quality and response tendency then becomes more detail than that in the previous studies. This study further explores the probability of having a biased response in addition to that of having a non-substantial response concerning response quality and response tendency in terms of bias-reduced substantial response in addition to substantial response. Such a study on the third-person effects is pioneer and deserves more attention in the future related studies.

A. Conclusions

The present findings indicate that in face-to-face interviews where the situation is allowed to vary naturally, the presence of others is still prevalent, although less frequent than that found earlier in Taiwan (Tu, 2001). In compared with one-fifth to two-thirds of face-to-face interviews were conducted in the presence of third persons in the Western societies (Blair, 1979; Hartmann, 1994; Reuband, 1992; Smith, 1997; Taietz, 1962), the maintenance of private interview in Taiwan have improved. The percentage of the third-person present in the Taiwanese surveys decreasing from 1996 to 2001 implies that rigid interviewer training as this study applied may have the contribution to the decline.

Most of the third-person presence was in terms of one to two persons, others other than children and spouse. Around 40% of interviews have third-persons present all the time, while over three-quarters of the interviews were conducted at the respondent's home. Attention should then be paid to the ethical issues concerning the tendency for Taiwanese to take the participation of children and spouse in the interview for granted and to consider it legitimate to ask personal questions. The data quality concerning personal and sensitive questions would then be vulnerable to response bias.

The present results showed significant third-person effects on biased response in contrast to bias-reduced substantial response. More chance of having biased response to personal income or sexual experience was consistently found in the interviews with the presence of others in one to three dimensions. Interviews taken at the respondent's home were more likely than at other places to have a biased response to personal income, sexual experience, and sexual partners. The willingness to express substantial

response to personal income as explained by third-person presence supports the theories of two-track response process and social environment (Argyle, Furnham, and Graham, 1981; Tourangeau et al., 2000). The fact that no significant third-person effects on response quality for religion confirms that third-person effects vary with different question characteristics. This echoes the previous studies in that the nature of questions differentiates the significance of the situational effect (Aquilino, 1993; Smith, 1997).

The significant third-party effect on respondents' substantial responses to questions with a high degree of social norms and sensitivity, no matter whether their responses are bias-reduced or not, was indeed found in the questions including cohabitation, extra-marital relations, abortion, unmarried women, personal income, and party identification. These findings on response tendency are similar to the previous studies (Aquilino, 1993; Smith, 1997; Taietz, 1962) and support the hypotheses concerning the spiral of silence and conformity. With the presence of third persons in the interview, people tend to express opinions similar to the majority in the society on matters with a moral component (Scheufele and Moy, 2000). On the other hand, the findings on underreporting personal income and party identification when third-persons are present may lead to inaccurate and edited response as suggested by Tourangeau (2000).

B. Suggestions

The fact that about 50% of interviews in this study were conducted with the presence of all kinds of others during the conversational interaction between the interviewer and the respondent indicates the difficulty of avoiding others being present in the interview, and implies significant negative effects on the accuracy of survey response. The practical suggestion

is that at least we need to seek a private interview when asking sensitive questions and questions with a high degree of social norms and sensitivity. The ideal of the maintenance of privacy in interviewing is totally dependent on our interviewers. The fulfillment in turn needs to start with in-depth interviewer training programs by including tips on how to avoid the presence of others.

The interviewer can also be considered a situational variable, as pointed out by Cannell, Miller and Oksenberg (1981). How to train the interviewer to avoid him/herself exerting third-person effects as the interviewer-presence effect is also an urgent issue. This study used post-hoc analytical strategies to control interviewer effect by using a Multilevel Regression Model. As a long-term solution, however, the survey quality still relies on proper recruitment of highly qualified interviewers and training programs which reinforce the importance of holding neutral attitudes during asking and acquiring the response from the respondents.

There are still a few limitations in this study. We are not sure when does the third-person effect initiate in the five stages of questioning and answering process as assumed by Cannell, Miller and Oksenberg (1981). An experimental design is needed to answer whether the third-person effect can happen in any stage or only in the final stage as suggested by Tourangeau (2000). Unfortunately, we cannot find the accurate answer based on the present results. Furthermore, with respect to biased response obtained from interviewer's judgment, the creative design in this study is the use of detailed observational tables for interviewers to record the respondent's behavior, which proved to be feasible. It, however, increases the interviewer's workload and requires the interviewer to recall and record these judgments as soon as possible after s/he completes an inter-

view. The accuracy of the observational record remains uncertain. On the one hand, it was suggested that a design of special codes could provide the interviewer a method to record their observations in shorthand. On the other hand, this study lacks a perfect design to cross-check the validity of the interviewer's evaluation. Having multiple observers or collecting information about interview situations from an audio or video record of the interview may be appropriate ways to improve the validity.

The third-person effect was examined in terms of main effects only. Three dimensions of the third-person presence were highly inter-correlated and then not all considered in the same regression model. This is mostly because in the current pioneer study, preliminary exploration is considered to be necessary. Given to this, interaction effects need to be further examined in the future in two categories. The first one is the third-person presence interacted with other situational variables such as the duration of presence and the place of interview. The spousal-presence effect was found to significantly interact with the duration of interview in the four waves of national survey data (Hartmann, 1994). Unfortunately, there has not been any similar study concerning such an interaction effect on survey response. The second one is third-person presence interacted with the characteristics of respondent and interviewer. The spousal-presence effect was however, found insignificantly affected by the respondent's gender, race and employment status in face-to-face interviews (Pollner and Adams, 1997) but significantly affected by the respondent's gender in a self-administered survey (Aquilino, 1993).

The justifications for multilevel regression models may be needed. The present findings show the random effect is not statistically significant in many regressions, which imply that the employment of multilevel models to

analyze the third-party effect on response quality and response tendency may not be necessary. One way is to adjust control variables in the regression model, especially interviewer characteristics used in the present study. Since interaction effect also suggested earlier, the appropriateness of the multilevel models need to be further testified by analyzing the magnitude of residuals and the fitness of model after all possible adjustment are concerned.

Finally, this study indicates that biased responses tend to occur when third persons were present in the interview. The issue left for the future study may be where the motivation of change come from in response to the interviewer's inquiry. The reasons why the respondents provide socially approved answers might be control of self-image, the protection of social prestige, and compliance with social norms at the individual level (Boeije, 2004). At the societal level, which motive is prevailing may be attributed to cultural particularities. People in the individualistic cultures may tend to prefer protecting self-presentation, while those in collectivistic cultures (such as Taiwan) go for compliance with social norms (Huang, 2004; Scheufele and Moy, 2000). Unfortunately, the debate over which motives apply remains unexplored in this study, which implicitly accepts the premise of moral conformity. More culturally comparative studies on how the response bias appears and how to reduce the biased response to social normative and sensitive questions will be strongly suggested.

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Appendix A Descriptive Statistics of 11 Questions for Dependent Variables and Control Variables in the Final Analysis

	Interviewer		Respondent	
	%	N	%	N
Gender-male¹	11.9	10	51.7	269
Marital Status-married¹	65.3	10	65.3	269
Education-elementary or less			17.8	269
Junior high			13.4	
senior high			27.9	
college or more			40.9	
Mean schooling years (S.D.²)			11.97(.27)	269
Mean age (S.D.²)			40.48(.74)	269
Ethnicity-Minnan¹			82.2	269
Others			17.8	

	Attitudes toward (%)				
	Strongly approve	approve	neutral	disapprove	Strongly disapprove
Cohabitation (268³)	0.7	35.8	8.2	47.0	8.2
Extra-marital Relationship (265³)	0	1.1	6.0	68.7	24.2
Homosexual relations¹ (265³)	0	15.1	12.5	48.7	23.8
Unmarried mother (265³)	1.1	43.5	8.6	40.5	6.3
Abortion (237³)	0.0	28.1	15.4	45.7	10.9

	No	Buddhism	Christian/Catholic	Others
Religion (%) (269³)	28.6	34.2	4.8	32.3

Appendix A Descriptive Statistics of 11 Questions for Dependent
Variables and Control Variables in the Final Analysis
(continued)

	No	Pan-blue	Pan-green
Party Identification (%) (265³)	64.2	18.1	17.7
	Yes	No	
Sexual experience (%) (262)	84.7	15.3	
Pornographic web browsing (%) (232)	26.2	73.8	
	No	1	2 and more
Sexual partner (%) (226³)	12.4	81.4	6.1
Mean personal income (S.D.²) (265³)		34532.94(33140.52)	

Note: 1. Reference group in multivariate analysis: male, married, and Minnan. 2. S.D.=Standard Deviation. 3. Valid cases.