

BRIEF REPORT

Where Are They Now? Locating Former Elementary-School Students after Nearly 40 Years for a Longitudinal Study of Personality and Health

Sarah E. Hampson

University of Surrey, Guildford, United Kingdom, and Oregon Research Institute

Joan P. Dubanoski, Winter Hamada, Anthony J. Marsella,
Jennifer Matsukawa, and Edward Suarez

University of Hawaii

and

Lewis R. Goldberg

Oregon Research Institute

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Teachers' personality assessments of over 2000 children were obtained by John M. Digman between 1959 and 1967 in elementary schools on two Hawaiian islands. In July 1998, we began tracing these former students, who were now adults in the 40- to 50-year-old age range. Over a 2-year period, roughly 75% of the original sample has been located, and over 60% of those located have completed a survey of their personality attributes, health status and history, and health-related habits and practices. The most successful methods for tracing these individuals included

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Address correspondence and reprint requests to Sarah E. Hampson, Department of Psychology, University of Surrey, Guildford GU2 7XH, UK. Fax: + 44 1483 259533. E-mail: s.hampson@surrey.ac.uk.



public records, personal contacts, and an Internet-based people-finder. Comparisons of the located and recruited samples with the original samples on gender and the Big Five personality dimensions indicated virtually no selection biases. The lessons learned for locating such individuals are discussed. © 2001 Academic Press

A major logistical challenge for all longitudinal research is locating participants for follow-up assessments. The problem is a daunting one even when the investigators are able to plan a longitudinal study in advance. It becomes even more formidable when the investigators must try to recontact individuals who participated in studies far in their past. Imagine, then, the challenge of reconstituting samples of individuals who were never aware that they had been included in studies at all. In the present article, we report on the procedures we used, and the success we achieved, in locating and recruiting middle-aged adults who had been assessed by their elementary school teachers roughly 40 years ago. No systematic records were kept of these children because the original investigator did not envision them participating in a longitudinal study. In this report, we evaluate our success at reconstituting an unbiased sample of the original school populations. Although some of the methods are unique to our study, there are lessons to be shared for other investigators engaged in tracing and locating research participants.

Between 1959 and 1967, John M. Digman obtained teachers' assessments of the personality characteristics of all the students in their classrooms at the end of an academic year. In schools on two Hawaiian islands, 88 elementary school teachers described their students using one of five different sets of personality scales. Digman's purpose was to explore the structure of children's personality traits, which at that time was believed to include at least 10 broad factors (Digman, 1963). Subsequent analyses of some of these data demonstrated the replicability across these samples of a simpler 5-factor model (Digman & Takemoto-Chock, 1981; Goldberg, *in press*), and these findings contributed to the ascendancy of the "Big Five" factor structure of personality that has come to predominate in personality assessment today (Digman, 1990; Goldberg, 1993; John, 1990).

In the early 1990s, Digman decided to try to locate these former students and reassess them as adults in order to investigate the long-term stability of their personality attributes. Moreover, in light of the emerging findings from Friedman and his colleagues of the links between childhood personality traits, particularly conscientiousness, and longevity (e.g., Friedman, Tucker, Schwartz, Martin, Tomlinson-Keasey, Wingard, & Criqui, 1995; Friedman, Tucker, Tomlinson-Keasey, Schwartz, Wingard, & Criqui, 1993), Digman recognized the potential for replication of these provocative findings in a strikingly different sample. The first step to realizing these aims was to locate the former schoolchildren.

There were several factors that contributed to the exceptional challenge posed by this particular location problem. Because it was not planned as a

longitudinal study, there was minimal information available. In prospective longitudinal studies, participants are recruited with future contacts in mind (e.g., Hahn, Sprafka, Burke, & Jacobs, 1990; Ribisl, Walton, Mowbray, Luke, Davidson, & Bootsmiller, 1996). Valuable information for tracking them is obtained at the time of recruitment, including their full name and address, social security number, and information about their parents, friends, and/or relatives. In contrast, the only information available in the present project were the children's names (in some cases only the first names were recorded, and in several cases the names were misspelled), the names of their schools, their grade levels, and typically the name of the teacher who assessed them. Because many of the usual location methods were not available to us, we developed our own procedures.

Despite the challenging nature of the problem, there were several factors working in our favor. In the first place, the original assessments were carried out on entire cohorts of schoolchildren; that is, all students at particular grade levels in each school were assessed, and therefore school records were a potentially valuable source of location information. Moreover, the geographical location of our original samples was another potential advantage: Less mobility was expected for inhabitants of the Hawaiian islands than might be expected on the mainland. Our goal was to locate and recruit at least 1000 participants, who would constitute a representative sample of the original child population. In this report, we are able to assess the representativeness of those we located and recruited in terms of their gender and their scores on the Big Five personality dimensions (Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellect/Imagination).

METHOD

The Original Samples

A detailed description of Digman's six child samples, including the assessment procedures and variables used by the teachers, is reported in Goldberg (in press). Here we provide a brief summary of this information. Because our present focus is on the location and recruitment of adult research participants, we pool the initial samples into three subsets in terms of their similarity in the initial information available to us.

Oahu ($N = 1719$). Children in the first, second, fifth, and sixth grades from eight schools on the island of Oahu were assessed in 1965; in most of our analyses, we treat the students in the two younger grades ($N = 885$) separately from those in the two older grades ($N = 834$). For all of these former students, the information available about them consisted of their first and in most cases their last names, their gender, grade level at the time of the original assessment, and the name of their elementary school.

Kauai ($N = 502$). Children in the sixth grade from eight schools on the island of Kauai were assessed in 1967. The information available to us included (in addition to their grade level at the time of the original assessment) only their first and last names, their teachers' names, and the name of their elementary school.

University of Hawaii Laboratory School ($N = 198$). Between 1959 and 1966, 198 children in first through ninth grades were assessed on one or more occasions. The information available to us consisted of their first and last names, their gender, parents' names, their addresses at

the time of the original assessment, some birthdates, some siblings' names, and some graduation dates.

Tracing Procedures

Between July 1998 and July 2000, we proceeded through five phases of location methodologies requiring increasing effort and complexity. All of the initial students' names were processed through each phase until they were located or were deemed lost to follow-up. For the first four phases, the recruitment team consisted of one three-quarter-time and two half-time staff. For the final phase, staffing was increased by an additional half-time team member.

Phase one. In the first 4 months of the study, we organized the Oahu and Kauai child information by sample, school, grade, and school district in order to predict the particular intermediate schools and high schools the students could have attended. Because no information about these students was retained in the elementary schools but instead was passed along as the students progressed, the high schools and district offices were the logical repositories of such information. High school affiliation is important in Hawaii and reunions are held frequently; therefore, we hoped to trace some of our targets through the reunion committees from each class. For these reasons, it was important to know the high school from which the children graduated and their probable year of graduation. During this first phase, we made the most progress with the Lab School sample by contact with the present school principal and with alumni at a class reunion.

In addition, we searched the telephone directories for each island, noting information on our targets and their possible relatives. Because of the many cultural groups living in the state, names are often uncommon, with only two or three people listed under a particular name. Matching names were noted as possible leads to our targets. Subsequently, all names not found in the local directories were searched for in "Directory-USA," a CD-ROM set of addresses from recent telephone directories across the nation (Parsons Technology, V. 3, 1997). We then searched Internet directories (e.g., <http://www.switchboard.com>). Each of these sources yielded different, corroborative, or no information about the target individuals.

Phase two. During this four-month period, we searched "high schools on the web" pages (e.g., alohaworld.com/hi-hs). We also searched through old telephone directories housed in the University of Hawaii library for numbers and addresses not in the current listings as well as the library's newspaper morgue for personal and family information (e.g., weddings, births, and deaths, or awards and professional achievements).

Personal "networking" was extensive during this phase; consultations with public school administrators, including the Superintendent of Schools, permitted us to gain access to Department of Education records. We also received significant help from eight local contacts on Kauai and from seven University of Hawaii Laboratory School reunion committees.

Phase three. During the next 4 months, we began extensive work in the school system, visiting district offices to view microfilmed student directory information and visiting selected high schools to search for addresses, birthdates, parents' names, and graduation dates. At each phase, the names of each potentially located individual was checked against the Voter Registration records to verify the name, address, birth date, and gender.

We mailed letters and reply cards to possible relatives of those persons who had not been located up to this time, requesting the most recent name and address of the target individual. We also searched our master database for individuals with the same last name who had attended the same elementary schools, hoping to discover sibling pairs. We mailed letters and reply cards to these possible relatives, asking for information about the target individuals. To increase our chances of contacting the correct relatives, the letters included specific target information (e.g., his or her childhood name, elementary school, grade level, and the year that the child was in that grade). Finally, we sent reminder letters 1 month later to all those who had not responded to our initial inquiry.

In this phase, we increased our networking efforts and added three consultants for the Waiahole, Kaneohe, and Kailua areas of Oahu. These consultants helped retrieve the last names of some students for whom only first names had been available, reducing this number from 96 to 66. When the first names were unique, former classmates were able to confirm the last names, and we were able to verify the birth dates and other information using voter registration records.

Phase four. Over the next 4-month period, records from the Hawaii Department of Motor Vehicle Registration were searched for those individuals with known birth dates, yielding a number of recent names and addresses. The University of Hawaii Alumni Office provided access to their alumni database, a valuable resource, since many former schoolchildren had later attended this local university.

Through personal contacts, we were able to locate additional reunion committees and to find two retired employees of one of the school districts. Because some of the children in our samples completed high school at private institutions, we contacted private school registrars, who either provided us with current information or mailed our materials to those listed in their alumni records. In addition, police and fire departments, as well as some businesses, were willing to forward our letters and packets to their employees. During this phase, we also initiated direct calls (and/or e-mail messages) to relatives and to some potential participants, based on the information we had received on the reply cards provided during the earlier phase.

Phase five. During this phase, we launched the project website (webdata2.soc.hawaii.edu/life). Before the first wave of recruitment letters was mailed in November 1999, we publicized the study by press releases to all state newspapers and other media, and we wrote a newspaper article for the local Kauai newspaper. We also posted flyers describing our project at libraries, shopping centers, and state offices. All of our mailings were marked "address service requested" on the envelope, which resulted in the return of undeliverable mail, the notification of mail that had been forwarded, and the provision of new addresses if mail-forwarding services had expired. Based on this information, mail was resent if possible. For the undeliverable cases, we continued our location efforts, often discovering new relative contacts who were then mailed inquiry letters and reply cards. Reply cards from the mailing of introductory letters to the target individuals yielded additional up-to-date information. We also received permission to send our materials to those individuals who presently resided in correctional or state hospital institutions.

In January 2000, a new Internet-based search engine (www.merlindata.com) became available, and this site proved invaluable in locating additional target individuals. Because this database is constantly updated when people change their addresses, it was especially helpful in confirming recent address changes. During the final 3 months of this phase, we conducted additional location inquiries, mailed reminder letters, and sent second copies of our questionnaire to all nonrespondents. The names of individuals not located up to this point were run through Internet sources that provide access to death records.

Confidentiality

Throughout all searches of public records and all contacts with other sources, we accessed only "directory" information (e.g., names, addresses, and basic identifying data). Each source received a letter describing the project and clearly stating our policy of confidentiality and secure data management. We stored all participant data in password-protected electronic files and in locked cabinets.

Recruitment Methods

Before beginning our actual recruitment activities, we hosted a focus group of men and women in our potential participants' age range, balanced for socioeconomic status, ethnicity,

and urban versus rural residence. Focus group members reviewed our project letters and brochure, the consent and information forms, and the questionnaire. They provided many suggestions regarding content, level, tenor, and cultural appropriateness, which we incorporated in our revised materials.

Prior to the first mailing we arranged for local publicity, as described above, to increase project visibility and create a research "ohana." This Hawaiian concept is understood locally as an inclusive group working or living together in mutual support toward mutual goals (in this case, the participants and researchers acting as a team). Our website provided a convenient way for participants to submit comments, questions, and address changes via the interactive features of the site.

Potential recruits were invited by letter to participate in the follow-up study. In our initial letter, we explained why we were approaching each potential participant, and we included a colorful brochure describing the study and a reply card with a prepaid envelope. In each letter we listed the individual's childhood name, the year of the original study, and the school and grade attended and we asked each recipient whether we had reached the right person. Two weeks later, we mailed another packet, including a \$5.00 bill, a welcoming letter, a brief information form, a bookmark, two copies of an informed consent statement, and the 16-page questionnaire; these packets were sent to all potential participants except for those very few who had requested not to be contacted after receiving our initial letter. Potential participants were informed that they would receive an additional \$25.00 for completing the questionnaire and returning it and one copy of the signed consent statement in the enclosed preaddressed and prepaid envelopes (one for the consent form and the other for the numerically coded questionnaire).

Participants were paid within 2 weeks after submitting their questionnaire and consent form. Those who did not respond within 1 month received a reminder letter; those who did not return their materials after 2 to 3 months received another copy of the questionnaire and the informed consent form, again with addressed and prepaid envelopes. We completed four waves of recruitment between November 1999 and July 2000.

RESULTS

Location

We have located roughly 75% of the individuals from Digman's original samples; of those located, 48 are deceased. By "located" we mean that the project has obtained a current name and address that has been verified in most cases by two or more of our location methods. Table 1 provides the primary location and recruitment rates for each of the four adult samples. The highest location rate was achieved for the Kauai sample (90%) and the lowest for the Oahu first and second graders (66%). Some possible reasons for the extraordinarily high location rate in the Kauai sample include the relatively rural (and thus communal) nature of that sample, the network of helpful consultants available to us on that island, and the fact that there is generally less migration from Kauai than from Oahu. As would be expected given the sex differences in name changes, location was easier for the boys (78%) than for the girls (67%).

Table 2 provides information on the relative effectiveness of our various location procedures. The most effective location methods were public rec-

TABLE 1
The Number of Individuals Located and Recruited
in Each of the Major Childhood Samples

Sample (original sample size)	Located		Recruited	
	<i>N</i>	% of original sample	<i>N</i>	% of located sample
Oahu (1st & 2nd grades)				
Boys (<i>N</i> = 474)	339	.72	170	.50
Girls (<i>N</i> = 411)	241	.59	151	.63
All (<i>N</i> = 885)	580	.66	321	.55
Oahu (5th & 6th grades)				
Boys (<i>N</i> = 442)	332	.75	192	.58
Girls (<i>N</i> = 392)	230	.59	143	.62
All (<i>N</i> = 834)	562	.67	335	.60
Kauai (6th grade)				
Boys (<i>N</i> = 260)	244	.94	160	.66
Girls (<i>N</i> = 242)	210	.87	145	.69
All (<i>N</i> = 502)	454	.90	305	.67
UH Lab School				
Boys (<i>N</i> = 94)	81	.86	47	.58
Girls (<i>N</i> = 88)	78	.89	47	.60
All (<i>N</i> = 182)	159	.87	94	.59
Total (<i>N</i> = 2403)	1755	.73	1055	.60
Boys (<i>N</i> = 1270)	996	.78	569	.57
Girls (<i>N</i> = 1133)	759	.67	486	.64
Corrected total (<i>N</i> = 2337)	1707	.75	1055	.62

Note. Of the total number of children in these samples, only first names were available for 66, who thus could not be located. Of those located, 48 are deceased and thus unavailable for recruiting. The corrected totals are adjusted for both types of individuals.

ords (22.8%), personal contacts (21.5%), and the Internet-based people finder (12.5%).

Recruitment

Of the potential participants who were still alive at the time of recruitment, over 60% have completed the initial questionnaire. As indicated in Table 1, the recruitment rate was highest for the Kauai sample (67%) and lowest for the Oahu first and second graders (55%). The pattern of intersample differences in recruitment rate was the same as that for participant location, but the differences were much reduced in size; for example, the Kauai versus

TABLE 2
The Percentage of Participants Located by Each Method

Location method	Percentage located
Public records	22.8
Personal contacts	21.5
Internet people-finder (Merlin)	12.5
Telephone and Internet directories	8.2
Letters to relatives and participants	8.2
Original data from the schools	1.9
Publicity	.2
Total located	75.3
Not located	24.7
Total	100.0

Oahu difference in recruitment rate was only 12% compared to 24% for the location rates. Gender differences in recruitment rates were also smaller than for location rates and reversed in direction; we were able to recruit 64% of the women who had been located compared to 57% of the men.

Geographic Mobility

Based on the current addresses of the participants, 65% of them are still residing on the island where they were originally assessed as elementary school children, 22% have moved to the mainland of the United States (or, more rarely, to another country), and 12% have moved to another island in Hawaii.

Representativeness of the Adult Sample

To what extent is the adult sample a biased representation of the original child population? Possible gender bias was examined by comparing the proportion of girls in the original population (47%) with the proportion of women in the located (43%) and recruited (46%) samples. Because more women than men change their last names from childhood to adulthood, it is harder to locate adult women than adult men; as a consequence, a significantly lower proportion of women were located than was their proportion in the child population ($\chi^2 = 41.6, p < .001$). On the other hand, because women tend to be somewhat easier to recruit than men, the recruited sample of adults does not differ in gender at a statistically significant level from the original child population.

Table 3 presents the mean levels of each of the Big Five personality dimensions for the located and recruited samples separately for each of the two gender subsamples. The values in this table are standard (z) scores, based

TABLE 3

Mean Scores of the Located, Recruited, and Deceased Samples of Adults on Each of the Big-Five Personality Factors Derived from the Teacher Assessments in Childhood

	Personality dimension				
	I	II	III	IV	V
Located					
Women (<i>N</i> = 759)	.00	.02	.06	.01	.00
Men (<i>N</i> = 996)	.01	.01	.04	.03	-.02
Recruited					
Women (<i>N</i> = 486)	-.03	.03	.08	.00	.04
Men (<i>N</i> = 569)	.03	.02	.10	.03	.03
Deceased					
Women (<i>N</i> = 16)	-.19	-.16	.08	.08	-.31
Men (<i>N</i> = 32)	-.17	.11	-.26	-.28	-.16

Note. The tabled values are mean factor scores based on the childhood teacher assessments; these factor scores were derived from all of the variables available in each sample. *Within each of the original child subsamples of boys and of girls, the factor scores have means of .00 and standard deviations of 1.00.* The standard deviations in the samples of Located and Recruited adults vary from .982 to 1.035 and average .998. (In the small subsamples of deceased individuals, the standard deviations range from .790 to 1.070, averaging .915.) Mean scores greater than .20 are listed in boldface type. I = Extraversion; II = Agreeableness; III = Conscientiousness; IV = Emotional Stability; and V = Intellect/Imagination.

on the original populations of boys and of girls; that is, the population mean for each personality dimension is zero, with a standard deviation of 1.00, within each gender subsample. Thus, these sample means provide a direct assessment of effect size, in *z*-score metric. As indicated in the table, the located group is a remarkably representative sample from the child population, with no personality factor showing much of a deviation from the population mean. As would be expected, both the located and the recruited sample had somewhat higher scores on the personality dimension of Conscientiousness, but the size of the largest such effect was only 1/10th of a standard deviation.

To provide some context for this small effect size, the corresponding mean *z*-scores for the 48 deceased individuals are also listed in Table 3. The mean *z*-scores for the relatively few deceased women was $-.31$ on Intellect; among the somewhat larger sample of deceased men, the mean *z*-scores were $-.26$ on Conscientiousness and $-.28$ on Emotional Stability. That is, those men who have already died scored over one-quarter of a standard deviation below the average of their peers on Conscientiousness and on Emotional Stability. The Conscientiousness effect is a direct replication of that found by Friedman et al. (1993).

In summary, then, our goal of recruiting an unbiased sample of adult participants appears to have been realized.

Discussion

Despite the enormous challenges posed by retrospective cohort studies, high location rates have been achieved in this and other studies. Boice (1978) located almost 94% of a sample of 1764 former tuberculosis patients after a lapse of 20 to 45 years. Mitchell and Jackson (1978) located 88% of 42 school boys after 15 years. Root, Smith, Whelan, Sandler, and Voda (1994) located 95% of a sample of 998 women, more than half of whom had not been contacted for over 10 years and 11% of whom had last been contacted 40 to 48 years previously. A somewhat lower location rate (61%) was reported by Klebanoff, Zemel, Buka, and Zierler (1998) in tracing 1750 women born between 1959 and 1966 whose mothers had taken part in a perinatal project.

What these studies suggest is that location is facilitated by the quality of information obtained at the time of initial recruitment and the extent to which members of the cohort are likely to be tracked by institutions or agencies, including public health officials and school counselors. Location is more difficult for a community-based sample, where there is no formal institutional record of the participants. Nevertheless, relatively high location rates can be achieved. Hartsough, Babinski, and Lambert (1996) found 81% of a community-based sample of "hyperactive" (ADHD) children first identified in 1974 and traced again in 1992. Longitudinal studies of drug addicted, homeless, mentally ill, or otherwise "at risk" participants face additional challenges (Coen, Patrick, & Shern, 1996; Hansen, Tobler, & Graham, 1990).

Our efforts to trace elementary-school children after a lapse of up to 40 years proved remarkably successful, considering that virtually no contact information was available beyond their names, ages, and grade levels at the time of the original assessment and the names of their elementary schools. We have already located 75% of the original sample, and the search continues. This percentage compares favorably with that from previous studies where the contact information was minimal and where the period between the initial contact and follow-up was long.

For example, a previous study by Klebanoff, Zemel, Buka, and Zierler (1998) is similar to ours in that those investigators had limited information about the targets of their search (women whose mothers took part in a perinatal project) and a comparable contact gap of 40 years. Klebanoff et al. (1998) located 61% of their participants. Our higher success rate may be attributable in part to the inclusion of men in our sample (women being harder to locate because many of them change their last names) and in part to the relative geographic immobility of residents of Hawaii.

We achieved the highest location rate for the Kauai sample, which we

attribute in part to the absence of mobility of residents of this small island and in part to our personal contacts with individuals in this relatively close-knit community. As anticipated, the majority (two-thirds) of our participants were still residing on the island where they had been assessed as children. The located sample demonstrated a bias in favor of men, indicating that women were harder to locate. However, the child personality data for the located sample showed no marked deviations from that of the original population.

Of those located and still alive, we were able to recruit over 60% to participate in a follow-up study and to complete a fairly long and detailed questionnaire. This recruitment rate is far higher than is typically achieved with unsolicited mailings. The gender ratio of the recruited sample was an unbiased representation of the original child population; although women are harder to locate, once located they are easier to recruit. The recruited sample was also remarkably representative of the original sample on all of the Big Five personality dimensions, with only a very modest tendency to have been more conscientious in childhood than the original population. More importantly, the recruited sample had virtually identical standard deviations as the original child population on all five personality dimensions. These findings attest to the effectiveness of our location procedures.

Location of individuals from up to 40 years past, given minimum identifying information, requires a team of persistent sleuths willing to follow every possible lead. Local consultants are important both formally through their access to repositories of government-obtained information and informally through their networks of contacts in community organizations. In both cases, time is needed to approach key decision makers and to seek permission for access to those resources that are needed. Public records and the Internet-based Merlin people-finder are excellent sources for verifying locations and for obtaining additional useful information.

We approached the process of location and recruitment with the explicit goal of appealing to cultural practices and sensitivities. Our letterhead was colorful and included cheerful Hawaii and Oregon logos. Because a warm welcome is an important part of the Hawaiian culture, we wrote warm welcoming letters to our participants and to those from whom we were seeking contact information. Our project newsletter included colorful pictures of Hawaii and of the research team wearing flower leis.

In return, we enjoyed outstanding support from both formal and informal sources of consultation and information, in part because the Hawaiian culture encourages "aloha" (warmth, openness, and positive feelings) for a local project and in part because the sense of "kokua" (willingness to help) are prominent features of Hawaiian culture, once trust has been won. We reciprocated with letters of appreciation, information about project progress, and honoraria for private consultants. The feeling on the part of our participants

of being part of an "ohana" (an inclusive group) and thus identifying with the project should be quite helpful for retaining their cooperation over the years ahead. Comparable sensitivity to local cultural practices may be equally helpful to those investigators involved in recruitment efforts in other locations.

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