Survey of Personality Traits of Perfectionism and Inhibition of Aggression in Australian Aborigines by Use of Internet Sources

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Highlights

- Personality traits were studied in Australian Aborigines using internet resources.
- Sample was 110 mostly remote, isolated Aboriginal communities.
- Traits of perfectionism (P) and inhibition of aggression (U) were assessed.
- Traits P and U vary greatly in Aborigines according to geographic location.
- Use of internet sources to survey inaccessible populations should be further studied.

Abstract

The intent of this study was to survey specific personality traits in an inaccessible population with the use of internet resources. We assessed two traits: perfectionism (P) and inhibition of aggression (U) in 110 Australian Aboriginal communities. The sources included documentary articles, photographs and video recordings. Trait P was assessed by ranking behaviour and the qualities of neatness, order, cleanliness and symmetry. Trait U was assessed from video recordings. Each community was categorized according to the presence or absence of the two traits as P+U+, P-U-, P-U+ or P+U-. Results: The frequencies of traits P and U varied markedly, but coherently, with geographic location. The P+U+ phenotype was clustered mainly along the northern coast of Western Australia, while the P–U– phenotype was found extensively in the central desert regions and in Arnhem Land. It was found that the results are qualitatively consistent with a previous analysis of the geographic distribution of genetic traits in the Aborigines (Birdsell, 1993). *Conclusions:* Personality traits may vary greatly in Aborigines according to geographic location. The use of internet resources to provide hypotheses about inaccessible populations should be further investigated.

1 Introduction

The intent of this study was to survey specific personality traits in an inaccessible population with the use of internet sources and to evaluate if there were coherent geographical variations in the traits worthy of further study. Our population of interest was a set of mostly remote, isolated Australian Aboriginal communities. To our knowledge, personality traits in this indigenous population have not been studied by any means. This is a topic that has potentially important implications regarding public health (Parker, 2010; Vos *et al.*, 2009).

Personality traits have been the subject of vigorous research in recent years, primarily because of (a) their potential importance in the aetiology of behavioural disorders (Kreuger, 2005), and (b) all of the associated issues impinging on public health, including crime, alcoholism and substance abuse (*e.g.* Cuomoa *et al.*, 2008). Although it is becoming increasing clear that virtually all personality traits have a high heritability (Kreuger, South, Johnson and Iacono, 2008), no specific genes have been found for any clearly defined personality trait. Current thinking is that personality traits are highly heritable, but because of genetic heterogeneity and the polygenic nature of the traits, no single gene contributes more than a few percent of the total effect on behaviour (Wahlsten, 2012).

Two traits are evaluated in the present study: perfectionism (denoted by P) and inhibition of aggression (denoted by U, for "unaggressive"). We assumed that 1) the traits are heritable, and 2) they could be evaluated for a given Aboriginal community with the use of resources available on the internet.

Perfectionism: Although no specific genes have been identified for perfectionism, the trait has been shown in a twin study to be heritable (Tozzi *et al.*, 2004). The trait has also been associated with many conditions that are heritable, such as autism (McAdoo and DeMeyer 1978), obsessive-compulsive and eating disorders (Halmi *et al.*, 2005), and panic disorder (Iketani *et al.*, 2002). As such, perfectionism has been proposed as an underlying genetic trait (or "endophenotype") for diseases with which it is associated (Flint and Munafò, 2007; see *e.g.*, Bachner-Melman *et al.*, 2007).

Inhibition of aggression: Aggression has been studied extensively in humans, and it has been found to be highly polygenic (Pavlov, Chistiakov and Chekhonin, 2012). The converse, inhibition of aggression, is a well-known aspect of the human personality and is a stable feature as a child grows to adulthood (Asendorpf, Denissen and van Aken, 2008). Inhibition of aggression has also been implicated in highly heritable conditions such as autism, where it extends to the parents of autistic individuals (Pivena *et al.*, 1994), as well as to individuals without autism who have autistic-like traits (Bejerot, Nylander and Lindström, 2001). Although it has been hypothesized that there exist repressor genes that would inhibit the final common pathway to the expression of aggression, giving rise to a non-aggressive behavioural phenotypes (Benis, 1990), no such genes have yet been identified.

In sum, although specific genes have not yet been found for the traits of perfectionism and inhibition of aggression, the evidence is strong that the traits are stable features of the human personality and highly heritable.

2 Methods

2.1 Choice of remote Aboriginal communities

Our sample was 110 Aboriginal communities for which adequate internet resource material could be accessed. The communities evaluated are listed in the Appendix, together with the approximate number of indigenous individuals in each community. The communities are in the Northern Territory (46), Queensland (18), New South Wales (3), South Australia (6) and Western Australia (37). Most of the communities are remote and relatively isolated, although many are the sites of relocated peoples. The study was keyed to specific location, rather than to a tribe or language group. A few sites in our sample are composites of adjoining communities. For example, Bulman/Weemol indicates that the categorisation of Bulman was based also on resource information for nearby Weemol.

2.2 Assessment of traits P and U

The assessment for each community typically utilised 4 to 6 separate sources (range of 3 to 15). These included documentary articles, photographs and video recordings. For the evaluation of trait P, particular attention was paid to the qualities of neatness, cleanliness, order, symmetry, stylism, as well as personal organisational gualities of individuals. Lack of trait P was indicated when the aforementioned qualities were lacking. Trait U was assessed from video recordings and evaluated as positive if the majority of the individuals were judged to be inhibited in the expression of normal aggression. For both traits, an attempt was made to assess if the trait was characteristic of the majority of the individuals in the community. In an effort to reduce sampling bias, we paid special attention to video recordings depicting activities in schools, musical presentations, and other communal activities where large numbers of individuals were present. Sometimes both traits P and U could be evaluated from the same source. An example is an Aboriginal artist who displays a meticulously done piece of artwork having highly symmetric designs, and when interviewed speaks in a very measured, soft voice. He would be rated as positive for both traits P and U. Another example would be a group of people performing an unstructured ceremonial dance with extremely loud vocalisations. They would be rated as negative for both traits P and U.

2.3 Categorisation of results

Each community was categorized, according to the presence or absence of the two traits as one of the four phenotypes: P+U+, P-U-, P-U+ or P+U-. If none of the categories were applicable, and the community was judged to be heterogeneous, then it was given the designation "polymorphic". In descriptive terms, the four phenotypes can be given the designations "perfectionistic unaggressive", "non-perfectionistic normally aggressive", "non-perfectionistic unaggressive" and "perfectionistic normally aggressive", respectively.

3 Results

3.1 Geographic variability and clustering of traits P and U

Results for the 110 Aboriginal communities are presented in the Appendix according to geographical location and phenotype, and are also plotted on a map outline in Figure 1. The number of communities in the P+U+, P-U-, P-U+ and P+U- categories were 13, 44, 18 and 16, respectively, while 19 were evaluated as being "polymorphic".



Fig. 1. Results for 110 Aboriginal communities according to phenotype category. Bottom panel shows perspective view from northern coast.

As seen in Fig. 1, the geographic distribution of the phenotypes was very uneven. The most obvious findings were 1) the clustering of the P+U+ type in the region west of Darwin and along the northern coast of Western Australia, and 2) the clustering of the P-U- phenotype in a wide area of the central desert regions and extending to the west coast, as well as clustering in most of Arnhem Land and a limited area of the Cape York peninsula. In descriptive terms this would mean that present-day Aboriginal communities tend to be "perfectionistic and unaggressive" in the northwest region, and "non-perfectionistic and normally aggressive" in the interior of the continent and in the other regions of Arnhem Land and Cape York mentioned above.

Two other possible clusters were noted: 1) a large region of "polymorphic" category to the south and west of the Gulf of Carpentaria, and 2) smaller region of the "mixed" phenotypes P+U- and P-U+ in the vicinity of Fitzroy Crossing, Western Australia.

3.2 P+U+ phenotype in outlying peninsular areas

Three remote peninsular communities of phenotype P+U+ ("perfectionist unaggressive") are mentioned separately here, as they seem to be isolates. These are 1) Ardyaloon at the tip of One Arm Point in Western Australia, 2) Yirrkala just south of Nhulunbuy in East Arnhem Land, and 3) Mapoon/Injinoo at the western tip of Cape York.

4 Discussion

4.1 Large Differences in personality traits

The main finding of this study is that there exist potentially very large differences in the personality traits of Aborigines from different regions of the continent. As personality has not – to our knowledge -- previously been a subject of study in Aborigines, this is a tentative finding that would need corroboration.

4.2 Geographic gradient in personality

Although we did not find in the literature any data on personality traits in indigenous Australians with which to compare our results, we did search for data on the geographic variation of other genetic traits in the Aborigines. After the conclusion of our study and after Figure 1 had been prepared, we did find the book of Birdsell (1993), who reported extensively on the geographic variation of 108 different characteristics in the Aborigines. These included morphological and dental attributes, as well as ABO blood group frequency, and metrics such as physical stature. Birdsell noted that many of the attributes - whether of monogenic or polygenic aetiology - had a clear geographic variability, or gradient, from the northwest toward the interior of the continent. He prepared and graphed a "composite gradient" and showed that it was a robust indicator of genetic variability in the Aborigines (Birdsell, 1993: pp. 435, 449). Our data also show just such a gradient, with the P+U+ phenotype clustering in the northwest of the continent and showing a transition to P-U- as the interior of the continent is reached. Qualitative agreement between our data and those collated by Birdsell may especially be seen for the geographic variation of 1) ABO blood group A1, and 2) physical stature in men (Birdsell, 1993: pp. 42, 311). The implication of this agreement is that our data do indeed reflect the geographic variability of a genetic trait (or traits) and that the variation is so large that it can be discerned by subjective assessment of internet sources. *[see Addendum below]*

4.3 Verification

To our knowledge a study of this kind has not been attempted before, so its accuracy in unknown. The agreement with Birdsell's gradient analysis noted above is a qualitative one, and our method relies on subjective determinations of the presence or absence of the two traits. The technique of evaluating videotapes of subjects to estimate behavioural traits has been used before (see *e.g.*, Bejerot *et al.*, 2001), but these have always been in controlled settings. Clearly, the results of a study like the present one must be considered to be provisional pending verification by accepted methods of personality assessment.

5 Conclusion

If the results of the present study are found to be useful in planning studies in a previously unstudied, largely inaccessible population, then it is possible that this type of survey might be adaptable to other branches of the biological or social sciences. Evaluation of resources based on information available on the internet can be done relatively quickly and at little expense. It is a technique that could generate testable hypotheses in the field of personality research and merits further investigation.

6 Appendix

Below is the list of 110 communities evaluated in this study according to Australian state and PU phenotype. The number in parentheses is the approximate number of indigenous people in that community.

Northern Territory [N=46]:

- P+U+: Nauiyu/Daly River (400), Nganmarriyanga/Palumpa (340), Timber Creek (230), Yirrkala (690).
- P–U–: Ampilatwatya (300), Areyonga (300), Atitjere/Harts Range (220), Bulman/Weemol (300), Croker Isl (300), Dhalinybuy (65), Engawala/Alcoota Stn (200), Goulburn Isl (500), Gunbalanya (880), Ikuntji/Haasts Bluff (230), Imangara/Ali Curung (250), Kalkarinji/Daguragu (1200), Kintore (410), Lajamanu (620), Ltyentye Apurte/Santa Teresa (550), Manmoyi (100), Milingimbi Isl (1000), Ntaria/Hermannsburg (540), Numbulwar (670), Nyirripi (320), Ti Tree (150), Titjikala (200), Utopia (1300), Yuendumu (700).
- P–U+: Borroloola (1000), Gapuwiyak (1000), Jilkminggan (300), Manyallaluk (250), Owairtilla/Canteen Creek (210).
- P+U-: Elliott (400), Katherine/Rockhole (3000), Maningrida (2000), Wutunugurra/Epenarra (220).
- Polymorphic: Alpurrurulam (390), Amoonguna (275), Bulla (200), Elcho Isl (2100), Ngukurr (1100), Nitjpurru/Pigeon Hole (100), Ramingining (800), Tennant Creek (1000), Tiwi Isl (2500).

Queensland [N=18]:

- P+U+: Mapoon/Injinoo (720), Mossman Gorge (2000), Boulia (230).
- P–U–: Aurukun (1200), Coen (410).
- P-U+: Mornington Isl (1000), Normanton (660), Pormpraaw (540), Wujal Wujal (320).
- P+U-: Lockhart River (640), Minjerribah/N Stradbroke Isl (2030), Napranum (830), Yarrabah (4000).
- Polymorphic: Doomadgee (1300), Kowanyama (1200), Mount Isa (6000), Ngurupai/Horn Isl (600), Woorabinda (970).

New South Wales [N=3]:

- P+U-: Boggabilla (360), Collarenebri (380).
- Polymorphic: Walgett (1000).

South Australia [N=6]:

• P–U–: Amata (300), Angatja (100), Mimili (280), Pipalyatjara (150), Pukatja/Ernabella (330), Yalata/Anangu (100).

Western Australia [N=37]:

- P+U+: Ardyaloon (330), Dawul (70), Kalumburu (410), Karalundi (175), Kununurra (990), Kupungarri (100),
- P–U–: Balgo (460), Burringurrah (175), Jigalong (320), Kiwirrkurra (210), Mungullah (300), Ngaanyatjarra (2000), Parnngurr (150), Pumnu (180), Tjuntjuntjara (160), Wakathuni (75), Warralong (100), Yungngora (280).
- P–U+: Halls Creek (850), Jarlmadangah Burru (100), Kija/Purnululu (400), Looma (370), Mowanjum (290), Muludja (100), Warmun/Turkey Creek (210), Yakanarra (160), Yiyili (<100).
- P+U-: Beagle Bay (300), Broome (3100), Bunbury (1000), Djarindjin/Lombadina (300), Ngalapita (100), Wangkatjungka (300).
- Polymorphic: Roebourne (800), South Hedland (5000), Wiluna (680), Wyndham (<800).

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ADDENDUM:

1) See also: Benis A.M (2017). *Geographic Distribution of Genetic Character Traits Based on the NPA Theory of Personality*, KDP/Amazon, ISBN 978-1520430317.

2) From Birdsell JB, 1993 (reference above):

Figures B-1 and E-2, pp. 42 and 311:



Figure B-1. Frequency of the gene A_1 .



Figure E-2. Stature of men in centimeters.