

# The University of British Columbia Twin Project: Personality is Something and Personality Does Something

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The University of British Columbia (UBC) Twin Project is a registry of approximately 1500 pairs of reared-together twins recruited from Vancouver, British Columbia and surrounding municipalities. The focus of the project is to examine personality and its disorders from a behavioral genetic perspective. The primary measures include self-report measures of variables from the major models of personality and personality disorders. Subsamples of the study have also been surveyed on a wide range of psychiatric conditions and symptoms, including, for example, substance use, mood, anxiety, coping, posttraumatic stress disorder, schizotypy, and several measures of the environment and experience. Also surveyed are general health and basic psychological processes including cognitive ability. This broad assessment has enabled us to examine not only the structure of personality, but also its potential role in psychopathology and other psychological processes. A feature of the project is that the measures selected reflect current thinking in the field as opposed to traditional psychiatric diagnostic criteria. The UBC Twin Project has been used in a number of collaborative projects on personality and psychopathology with other worldwide twin registries. At the present time, no DNA has been collected; however the facility to collect these data is available. Collaborative projects on this and future questionnaire studies are welcome.

Gordon Allport's (1937) famous dictum that 'personality is something and personality does something' has set the course of the University of British Columbia (UBC) Twin Project since its inception in 1991. Our project is a classical reared-together study of approximately 1500 pairs of twins aged 18 to 84 years, recruited from Vancouver, British Columbia, and surrounding municipalities. Twin pairs were recruited using advertisements placed in the major daily newspapers and in periodicals delivered free to all households on a monthly, weekly or twice weekly basis. The combination of the large daily papers and local outlets has ensured blanket coverage of a specific geographic area that reaches potential families from every socioeconomic level. As a further incentive

and to help lower socioeconomic families, who often do not participate in research projects, the UBC Twin Project provides participants with honoraria ranging (depending on the size of the questionnaire battery) from \$25 to \$50 per twin individual. Providing an honorarium has increased study completion rates and has also facilitated the recruitment of dizygotic (DZ) twin pairs such that the sample is roughly evenly split between monozygotic (MZ) and DZ pairs. However, the female bias associated with volunteer twin samples remains. Zygosity was diagnosed by questionnaire (e.g., Nichols & Bilbro, 1966) and examination of recent color photographs. The study uses a postal survey design. At this time, no DNA samples have been obtained but the facilities and additional questionnaire work are in place. We welcome collaborations in this regard which have proven very successful with other groups as will be described below.

Unlike many other studies of personality and its disorder, the UBC Twin Project does not to rely on the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) diagnostic system to define the phenotypes under study, but selected a wide range of self-report measures representing the leading models in the field. For example, measures of the Gigantic Three, Big Five, and interpersonal circumplex models of normal personality such as the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1992) and Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992), and Interpersonal Adjective Scales (IAS; Wiggins, 1995) respectively were collected, as well as lesser known but popular adjective rating scales. Additionally, instruments were included that were designed to take into account a dimensional model of personality disorder (i.e., that personality disorder is the extreme of normal personality function). An example is the Dimensional Assessment of

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Personality Pathology (DAPP; Livesley & Jackson, in press). This was used in direct preference to DSM diagnoses, which were developed largely independently of personality research and are of uncertain validity (e.g., Livesley & Jang, 2000). The broad range of questionnaires has allowed basic heritability studies, direct tests of the dimensional models of personality pathology, and investigations of fundamental issues concerning the number and content of domains of personality disorder (see Jang et al., 2000, for a review). In short, the UBC Twin Project was designed to provide the means to use behavioral genetic methods to link and test the major assumptions of mainstream personality research.

The range of constructs in the UBC Twin Project has allowed a number of collaborative projects, including studies with researchers in Bielefeld, Germany (Riemann et al., 1997) and Japan (Ando et al., 2004) on common measures to address important issues such as the universality and generalizability of models of personality function across cultures. To illustrate, phenotypic research suggests that there are five major personality domains, each composed of a number of smaller facet traits, arranged in a hierarchical manner. The ability to jointly analyze data from all three cultures simultaneously allowed tests of whether the similarity of personality structure was reflected by the same genetic and environmental factors. It was shown that while the general form of genetic and environmental influence appears identical across cultures, there are differences at the facet trait level (Yamagata et al., in press). These findings highlight the importance of using, whenever possible, the complete version of the instrument (containing measures of major personality domains and facet traits), as opposed to short or truncated versions (yielding only measures of the major domains), which is often seen in collaborative projects.

Another lesson from these collaborations was that the definition of any personality domain is dependent not only on the traits that share a common phenotypic and etiological relationship, but also by the traits they share little with (see Ando et al., 2004). Thus, it is no longer sufficient to test the validity of a domain like neuroticism by showing that the six facets thought to define it share a common phenotypic and etiological relationship, but also necessary to show that these six traits have little in common with traits from other domains. The same applies to psychopathology research. For example, in testing the validity of concepts from the DSM-IV (4th ed.; American Psychiatric Association, 1994), such as the Cluster A personality disorders, it is not enough to demonstrate that the three diagnoses comprising this cluster — schizoid, paranoid and schizotypal — share a common etiology; it is important to show that they have much less in common with Cluster B and C diagnoses. In order to validate the personality disorder clusters, all 10 of the personality disorder diagnoses should be examined

simultaneously and not just subsets taken out of context of the others.

Despite the strides made in personality research (e.g., the development of valid and reliable scales), unresolved questions remain around the etiology of personality phenotypes. For example, how does personality develop? Popular personality measures have been used in an attempt to find putative loci underlying each measured trait. This research has produced mixed results (see Jang, 2005, for a review), clearly indicating that knowing that personality is heritable is not sufficient. As a result, a major part of the design of the UBC Twin Project is to address this question. Personality theories suggest many testable hypotheses (e.g., stress-diathesis models) about how traits develop and function, which are relevant to Allport's statement that 'personality does something'.

Regarding questions of trait development, we have attempted to not only survey exposure to a range of events and experience, but also index the severity of perceived events. For example, self-report questionnaire data have been collected on traumatic events that are assaultative in nature — such as sexual abuse, being in fights, having been robbed — as well as data on nonassaultative events such as being in a motor vehicle accident, fire, or natural disaster. We have also assessed our participants' perceptions of the family environment (e.g., using the Family Environment Scales; Moos & Moos, 1994), their school environment (e.g., Classroom Environment Scale; Moos & Moos, 1994), sibling interactions and parental preferences (e.g., Sibling Inventory of Differential Experience; Daniels & Plomin, 1985), and how each participant characteristically responds to environmental events (e.g., Environmental Response Inventory; McKechnie, 1974). These data are useful in testing models of personality trait and disorder development such as gene–environment interaction (Jang et al., 2005) and correlation (Jang et al., 2001).

Regarding what personality does, the UBC Twin Project continues to collect data on a number of psychiatric conditions. Clinical research consistently identifies personality features as being comorbid with virtually all forms of common psychopathology. Personality concepts also frequently appear as diagnostic criteria in many forms of psychopathology which leads to the question 'what is the role of personality in mental illness?'. The literature suggests three broad hypotheses: (1) personality factors increase the risk of developing psychiatric disorder, (2) personality and psychopathology occupy a single domain, and psychopathology is simply an expression of the extremes of normal personality function, and (3) personality variables play minor roles in the development of a disorder and changes in observed personality are simply the result of the disorder (see Jang et al., 2006, for further discussion). These questions are currently being investigated in the context of the anxiety disorders, particularly posttraumatic stress

disorder (PTSD), using a number of approaches including multivariate analyses, gene-environment correlation and interaction studies. Our research on the relationship between personality and anxiety has encompassed a wide range of variables, including vulnerability factors for anxiety disorders (e.g., anxiety sensitivity, poor coping, and other features; Jang et al., 1999; Jang et al., in press; Mathews et al., in press; Stein et al., 1999), and specific symptoms of anxiety-related disorders, including symptoms associated with obsessive-compulsive disorder, PTSD, and hypochondriasis (Jang et al., 2003; Mathews et al., 2004; Stein, Jang, & Livesley, 2002; Stein, Jang, Taylor, et al., 2002; Taylor et al., 2006).

Building on these studies, we have commenced a series of investigations on personality and anxiety disorders involving data collection across Canada. As in our previous personality research, the assessment of anxiety disorders does not rely on standard diagnostic criteria that focus on a narrow range of behavior that is understood out of the context of its relationship to nonpathological forms of the behavior. Rather, the study uses quantitative measures that reflect the best measures, practices, and theories in the area.

In our view, problems with phenotype definition and measurement have hindered the search for putative genetic loci. An ongoing theme in our research involves the refinement and development of definitions of phenotypes that more precisely reflect the genetic and environmental influences and their interplay. We urge that more collaborative projects be fostered, which can be accomplished with as few as one or two common measures across studies. It is vital that for such research, complete scales that go beyond diagnostic criteria and that are developed in reference to clinical or developmental theory (e.g., one that incorporates a spectrum model of disease) are used to provide avenues of explanation and development, not just descriptions of behavioral phenomena.

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