Personality Development since Childhood Associated with Adult Chronic Insomnia: A Study by Wang's Memory-Tracing Personality Development Inventory (WMPI)

Xueyu Lv[1*], Yan Ma[2*], Fan Feng[1], Lan Hong[1], Jian Wang[1] & Weidong Wang[1]

[1] Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing, China

[2] Division of Interdisciplinary Medicine and Biotechnology, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA

Correspondence: Weidong Wang, M.D., Guang'anmen Hospital, China Academy of Chinese Medical Sciences, 5 Beixiange Road, Xicheng, Beijing, China. Tel: 86-010-8800-1178. E-mail: wwdtougao2016@163.com

The authors contribute equally to this manuscript, and are the co-first authors.

Abstract

Objective: This study aimed to analyze the deviation in normal personality development in chronic insomnia patients.

Material and Methods: Eighty-one patients with chronic insomnia and 290 healthy controls were assessed with Wang's Memory Tracing Personality Development Inventory (WMPI). Differences between the two groups were explored to identify developmental characteristics.

Results: Significant differences were found in three phases. During the chronological ages of 3-6 years old, the differences are relatively minor, and manifest in a lower independence level in patients ($p<0.05$). In older individuals, personality development deficits present mainly as abnormal thinking, excessive interpersonal anxiety, and less independence ($p<0.05$). Subjects of different ages present with their own developmental characteristics. Generally, patients younger than 36 years of age had a lower developmental level in independence and across emotional dimensions. In summary, there are significant differences in personality development between primary insomniacs and healthy controls ($p<0.05$).

Conclusion: Individuals are prone to develop chronic insomnia in adulthood if they exhibit a deviation from normal, or expected, personality development while in childhood. Abnormal development of personality correlates with the incidence of chronic insomnia. Subjects with lower independence in self-cognition tend to pursue perfectionism which may associate with a predisposition for chronic insomnia. Patients at different ages present different characteristics in personality development.

Keywords: WMPI, chronic insomnia, primary insomnia, personality development, childhood

1. Introduction

There are several patterns to explain the mechanism of insomnia. For example, in the 1980s, Dr Art Spielman brought the 3 P's model into research on poor sleep. The 3 P's model, describes predisposing, precipitating and perpetuating factors relevant to the development and maintenance of insomnia (Spielman, Caruso, & Glovinsky, 1987). Certain personality traits may constitute important predisposing as well as perpetuating factors for insomnia. In recent studies, insomniacs showed self-focused rumination, keeping emotions and awareness to themselves (Levin, Bertelson, & Lacks, 1984; Kalogjera-Sackellares & Cartwright, 1997). Others also report insomniacs as exhibiting a more neurotic and anxious symptomatology than exhibited by control subjects (Shealy, Lowe, & Ritzler, 1980). In addition, these personality traits are typically associated with perfectionism (Lundh, Broman, Hetta, & Saboonchi, 1994; Vincent & Walker, 2000; Besser, Flett, Hewitt, & Guez, 2008), with an excessive effort on initiating sleep and putting high requirements on sleep quality. In general, they consider personality as the predisposing factor in the development of a vicious cycle.

All of the studies above focus on current personality characteristics of insomniacs and use a variety of personality inventories to assess subjects. However, these inventories are cross-sectional and do not offer possible explanations of how insomniacs might initially develop these personality characteristics. In our clinic, experience tells us that potential aberrant personality development begins early in life for insomniacs, specifically in childhood. Dr. Wang, with over 30 years of clinical experience in treating insomnia and related psychological theory, proposed that psychological disorders, including primary insomnia may be associated with earlier abnormal personality development. The abnormal development contributes to personality aberrance. Eventually, negative life events exacerbate individuals' symptoms and distress. We hypothesize that chronic insomniacs consistently demonstrate abnormal personality development starting in their childhood. In order to examine this development, we used a personality development inventory which depends on subjects' recall of their life events before 25 years old.

2. Materials and Methods

2.1 Subjects

The research was approved by the Ethics Committee of Guang'anmen Hospital. Chronic insomnia patients were collected from the Department of Psychology and the Sleep Clinic in Guang'anmen Hospital, China Academy of Chinese Medical Sciences. The insomnia patients were recruited by doctors' recommendation. Some doctors in the Sleep Clinic and the Department of Psychology participated in the study voluntarily. They were trained by Dr. Lv and Dr. Feng on the study protocols. When doctors identified potential patients, they proposed that those patients participate in the study. Dr. Lv and Dr. Feng instructed these patients to complete the WMPI. The healthy controls were recruited by advertisements from Guang'an men Hospital and a corporation for psychological-health screening. Subjects were interviewed by Dr. Lv and Dr. Feng according to inclusion criteria. All subject participation was on a volunteer basis, and no subject received any financial remuneration. Inclusion criteria included the following: (1) met the diagnosis criteria of chronic insomnia according to the International Classification of Sleep Disorders, the second edition (ICSD-2), and insomnia lasting more than 3 months; (2) older than 20 years old; and (3) school educated for no less than 9 years. Healthy controls consisted of company staff and healthcare providers of an area hospital recruited by advertisements. The healthy controls were all above 20 years of age and school educated for no less than 9 years. In addition, subjects in both groups were interviewed by doctors to exclude any mental disorders or physical conditions that may have affected the incidence of insomnia.

2.2 Wang's Memory-Tracing Personality Developmental Inventory (WMPI)

WMPI, developed by Dr. Weidong Wang and his colleagues (Wang, Lv, & Shan, 2016), has been used as measurement tool to investigate how individual personalities are developed. Childhood is particularly important for personality development. With the hypothesis that personality usually becomes mature and stable at around 25–30 years old, WMPI asks subjects to respond to a series of questions based on their experience before reaching this age interval. According to Wang's experience, preschool and adolescence periods are critical for personality development. Thus, the WMPI highlights 3 phases of life development: 3–6 years of age; 7–18 years of age and 19–25 years of age. WMPI comprises 37 dimensions over 9 subscales, which include a total of 248 items. Each item describes a statement (i.e., "I am worried about going outside by myself."), and participants were asked to respond to all statements based on their recall of their childhood and adolescent experiences at each development phase (Table 1). Subscales included courage, ego consciousness, way of thinking, volition, interpersonal relationships, sexual development, perception of the world, life events and parenting styles. Each subscale has several dimensions, and 37 dimensions are included in the WMPI (see Table 2, the construction of WMPI). Items are rated on a 5-point scale of degrees of conformity from 0 (strongly disagree) to 4 (strongly agree). The total scale of each subscale is the sum of the scores, and a higher score indicates an aberrant personality trait, except in the subscale "volition", where the scoring rule is the opposite.

WMPI has been validated (Wang et al., 2016). The reliability of the inventory is 0.990, and the reliability of the 9 subscales is between 0.780 and 0.963. The RMSEA of every subscale was less than 1, and the Non-Normed Fit Index (NNFI) and Comparative Fit Index (CFI) were nearly 0.90, which indicates that the inventory is of high quality.

Table 1. An example of WMPI formation

item	3-7yr	8-18yr	19-25yr
I am worried about going outside by myself	0,1,2,3,4	0,1,2,3,4	0,1,2,3,4

Please read the sentence and select proper number according to your situation in 3 different stages before 25 years old. (0= strongly disagree, 1=disagree, 2=difficult to judge it, 3=agree, 4=absolutely agree).

Table 2. The construction of WMPI

Subscales	Dimensions	Number of items
Courage	Interpersonal fear	12
	Natural fear	4
	Adaptability	7
	Anxiety	5
Ego consciousness	Social ego	6
	Physiological ego	4
	Family ego	3
	Independence	6
	Self-care capability	4
Way of thinking	Abnormal thoughts	10
	Irrational thoughts	5
	Caution	3
	Hubris	5
Volition	Resolution	4
	Consciousness	3
	Delay of gratification	4
	Insistence	4
Interpersonal relationship	Gregariousness	10
	Altruism	4
	Dependence	5
Sex development	Relationship with opposite sex	8
	Cognition of love	10
	Cognition of sex	4
World conception	Motivation and attribution	9
	Values	11
	Viewpoint of cause	4
	Viewpoint of friendship	4
	Viewpoint of health	5
Life events	Family events	7
	Social events	19
	School events	10
	Events related to sex	9
Parenting styles	Stern punishment	9
	Excessive interference	10
	Spoiling	3
	Contradictory parenting	5
	Ignore parenting	3
Lie detection	---	10
Whole inventory	---	248

2.3 Statistical Analysis

SPSS 17.0 was used for statistical analyses. Differences between healthy controls and insomnia patients were examined by an independent sample t-test. Between the 3 age stages, ANOVA was used to measure the differences. A chi-square test was used to compare non-parametric variables between groups. A p value of < 0.05 was considered significant.

3. Results

3.1 Included Subjects with Chronic Insomnia and the Healthy Controls

After screening according to inclusion criteria, the data of 81 patients with chronic insomnia and 290 healthy controls qualified to participate in this study. The demographic characteristics were shown in Table 3. No statistical difference was found between the 2 groups regarding age, gender ratio, ethnicity, marital status or rank in family. There are differences in education level and employment ($P < 0.01$).

Table 3. Demographic comparison between insomniacs and healthy controls

	Chronic Insomnia (n=81)	Healthy Controls (n=290)	p
Age (years)	41.3±7.8	38.6±9.5	0.07
Gender (M/F)	27/54	78/202	0.25
Education level (below college/ college and above)	147/143	58/23	<0.01**
Employment(employed/unemployed/retired)	278/0/12	70/1/10	<0.01**
Ethnicity (Han/others)	68/13	238/52	0.35
Marital status (single/married/others)	17/59/5	95/159/50	0.11
Rank in family (only child /eldest/youngest/others)	22/18/14/27	56/66/71/154	0.20

Note. **p<0.01.

3.2 Comparisons between Chronic Insomnia and Healthy Controls

Differences were found between the two groups in all 3 measured life phases (Table 4). In the 3–6 year old period, the difference only manifests in independence. As an individual grows up, however, more deficits in personality appear and primarily manifest in thinking mode, interpersonal anxiety and independence.

Table 4. Difference between patients and healthy controls in the 3 age stages investigated by WMPI scores

	Chronic Insomnia (n=81)	Healthy Controls (n=290)	p
3–6 years old			
Independence	16.69±7.81	14.62±5.19	0.01*
7-18 years old			
Interpersonal fear	37.85±14.06	34.51+10.15	0.03*
Independence	16.74±6.36	14.46±4.65	<0.01**
19-25 years old			
Self-focused thinking mode	12.50±4.18	11.37±3.82	0.04*
Stubborn thinking mode	12.18±4.72	10.88±3.71	0.01*
Interpersonal fear	35.40±12.64	31.90+9.25	0.02*
Independence	15.58±5.40	13.61±4.19	0.02*

Note. Only significant results of each subscales were reported in the table.

* p<0.05, **p<0.01.

3.3 Comparison of Childhood Personality Development Characteristics among Patients in Different Age Groups

Patients were divided into 3 different groups according to age: under 35 years (Group 1), 36-50 years (Group 2), and older than 51 years (Group 3). Among these 3 groups, ANOVA and post-hoc analyses, shown in Table 5, highlight the different characteristics in their childhoods. Significant difference was found between group 1 and group 3 in personality development, particularly on the parenting style subscale.

Table 5. Personality development among groups in 3-6 year old period

Dimensions	Groups involved	p
Stern punishment	Group 1 and 2	0.11
	Group 1 and 3	0.03*
	Group 2 and 3	0.56
Contradictory parenting	Group 1 and 2	0.06
	Group 1 and 3	0.01*
	Group 2 and 3	0.41
Excessive interference	Group 1 and 2	0.08
	Group 1 and 3	0.01*
	Group 2 and 3	0.34
Ignore parenting	Group 1 and 2	0.03*
	Group 1 and 3	<0.01**
	Group 2 and 3	0.11
Spoiling	Group 1 and 2	<0.01**
	Group 1 and 3	<0.01**
	Group 2 and 3	0.02*
Stubborn way of thinking	Group 1 and 2	0.22
	Group 1 and 3	0.04*
	Group 2 and 3	0.34
Independence	Group 1 and 2	0.01*
	Group 1 and 3	<0.01**
	Group 2 and 3	0.27
Chagrin	Group 1 and 2	0.13
	Group 1 and 3	0.03*
	Group 2 and 3	0.43
Parental-child relationship	Group 1 and 2	0.17
	Group 1 and 3	0.03*
	Group 2 and 3	0.40

Note. * $p < 0.05$, ** $p < 0.01$.

4. Discussion

In this study, we proposed that individuals are prone to develop chronic insomnia in adulthood if they had developmental and relational difficulties or deficits when they were younger than 25 years old. Compared with healthy controls, patients with insomnia have different personality traits in their childhood. During the 3 age stages examined (3-6 yr, 7-18 yr and 19-25 yr), these patients demonstrate an increasingly deviated developmental orbit from "normal" personality. During the 3-6 yr period, atypia is exhibited in independence. However, as they age, patients show increased deficits in personality development, mainly manifesting in

abnormal thinking modes, excessive interpersonal anxiety and low independence. These findings are consistent with our experience in clinical practice. In different age groups in insomniacs, several distinctions in personality traits are already present in childhood. Parenting styles differ significantly among the 3 phase groups. Those younger than 35 years old report the largest number of improper parenting styles, including stern punishment, excessive interference, spoiling, contradictory parenting and ignore parenting

Independence on the WMPI refers to the ability of judging oneself independently and taking care of oneself independently. It is interesting that from childhood chronic insomniacs seem less independent as compared to "normals". This difference is consistent with our clinical experience (Du, Li, Lv, & Wang, 2013) and previous research on the personality of insomnia (Hong, Zhou, Liang, & Wang, 2014). Low in independence means caring about others judgment excessively, which may weaken one's sense of self. Individuals with this state of mind often pursue positive validation from the outside world. If they do not receive a positive response, they will feel anxious and insecure. Thus, they spend excessive energy to avoid such a situation. They may set excessively high standards of performance which manifests as perfectionism. Besser, etc. measured physiological arousal during experimentally induced task-failures and found that perfectionism was associated with increased arousal levels (Besser et al., 2008). Insomniacs often report that they put a lot of effort into trying to fall asleep, which is a function of cortical arousal. On the other hand, previous studies consistently report that insomnia patients show a tendency to be self-focused: with low self-confidence and having doubts in ones' own action (Lundh et al., 1994; Vincent & Walker, 2000). Low independence in childhood continues to adulthood in chronic insomnia patients which can be explained as a trait in insomniacs. Also, it is potentially a key characteristic and predisposing factor for chronic insomnia as well as other types of insomnia.

Insomnia is considered to be a neuroendocrine aberration, as well as a psychiatric and neurodegenerative disorder. Based on previous studies, exposure to early-life stresses results in a series of responses that may trigger an activation of the hypothalamic–pituitary–adrenal axis (Riemann et al., 2010; Buysse, Germain, Hall, & Nofzinger, 2011; Cano, Mochizuki, & Saper, 2008; Harvey, 2002; Roehrs, Gumenyuk, & Drake, 2014). Likewise, low independence may contribute to a similar physical mechanism which also plays a critical role in developing hyper-arousal reactions. Wirtz PH studied circadian profiles of cortisol secretion in 50 middle-aged men who underwent an acute standardized psychosocial stress task. He found that the perfectionists of them seem to contribute independently to stress-induced bodily responses, including HPA axis activation, in response to psychosocial stress (Wirtz, Elsenbruch, Emini, Rüdisüli, Groessbauer, & Ehlert, 2007). Also, Kempke S found that self-critical perfectionism predicts a lower cortisol response to experimental stress in patients with chronic fatigue syndrome (Kempke, Luyten, Mayes, Van Houdenhove, & Claes, 2016). Based on such findings, we hypothesize that low independence is a core psychopathological map contributing to perfectionism that may initiate individuals' HPA axis activation. The result is hyper-arousal during sleep.

In different age groups, parenting styles differ greatly, especially between those younger than 36 and older than 50. For those younger than 36, most subjects were born under the Chinese *One-child Policy*. The parent-child relationship is the most important in single family households as there are no siblings. Thus, no matter which abnormal parenting style they may have been exposed to, those patients younger than 36 years old agree more than those older than 50. For those older than 50 years old, they often have more than 3 sisters or brothers. In complicatedly structured family models, focus on parenting style may be weakened. In conclusion, personality development in insomnia patients is likely marked by times and social context.

Current intervention for chronic insomnia mainly focuses on medication (Ma, Dong, Mita, Sun, Peng, & Yang, 2015). In our practice experience, chronic insomnia patients often rely on such medication not only because of physical addiction. Psychological dependence is a much harder factor for them to cease taking medication. They are usually anxious about sleep and insomnia, and they enter a vicious cycle of fatigue and anxiety where the urge to get a sound sleep and subsequent failure to initiate sleep causes more anxiety. These similar behavioral and cognition processes may have deeper reasons. In addition, our findings indicate that chronic insomnia may be correlated to developmental stresses and strains Thus, to better treat insomnia, psychological intervention should be a critical focus rather than a purely medical approach (i.e., medication). To address developmental areas such as a lowered sense of self agency (subjective feelings of independence), emphasis and psychological intervention of insomnia may focus on strengthening ego functions found to enhance feelings of efficacy.

Limitations of the Study

In analyzing our study, we find some limitations. The sample is relatively small, and the insomnia group and healthy controls are not well matched due to opportunity sampling. This may restrict the application of our findings. In addition, the sample was from the Beijing City area, thus the results may not be applicable for the

whole country. In order to optimize the findings, a better designed investigation should be carried out in the future.

5. Conclusion

Individuals are prone to develop chronic insomnia in adulthood if they had atypical personalities when they were younger than 25 years old. Subjects with low independence in self-cognition tend to pursue perfectionism, which may be associated with predisposing and perpetuating factors for chronic insomnia. Patients at different ages present different characteristics in personality development. These findings provide new perception for precaution and treatment for insomnia.

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Competing Interests Statement

The authors declare that there is no conflict of interests regarding the publication of this paper.

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