
REVIEW ARTICLE

Loneliness and the health of older people

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SUMMARY

Background The intense focus on major psychiatric disorders in both contemporary psychiatric research and clinical practice has resulted in the relative neglect of less definable constructs such as loneliness and how such entities might impact on health outcomes. The purpose of this review is to raise awareness among physicians and psychiatrists of the medical impact and biological effects of loneliness as well as making the argument that loneliness should be a legitimate therapeutic target.

Methods Using Pubmed we searched the literature for research and review papers looking at loneliness as a construct, how it is measured and its health effects. We reviewed the relevant papers and have summarized their main findings.

Results Loneliness has strong associations with depression and may in fact be an independent risk factor for depression. Furthermore loneliness appears to have a significant impact on physical health being linked detrimentally to higher blood pressure, worse sleep, immune stress responses and worse cognition over time in the elderly. There is a relative deficiency in adequate evidence based treatments for loneliness.

Conclusion Loneliness is common in older people and is associated with adverse health consequences both from a mental and physical health point of view. There needs to be an increased focus on initiating intervention strategies targeting loneliness to determine if decreasing loneliness can improve quality of life and functioning in the elderly. Copyright © 2008 John Wiley & Sons, Ltd.

KEY WORDS — loneliness; depression; physical health; cognition; treatment

INTRODUCTION

The intense focus on major psychiatric disorders in both contemporary psychiatric research and clinical practice has resulted in the relative neglect of less definable or clear-cut constructs such as loneliness and how such entities might impact on health outcomes. Although the health consequences of loneliness equal or exceed that of many major psychiatric disorders, there is little mention of the construct of loneliness in the psychiatric literature, with most publications appearing in the social psychology and social gerontology journals. The

purpose of this review is to raise awareness among physicians and psychiatrists of the medical impact and biological effects of loneliness and make the argument that loneliness may represent a legitimate target for health care interventions.

WHAT IS LONELINESS?

Loneliness can be defined as a subjectively experienced aversive emotional state that is related to the perception of unfulfilled intimate and social needs (Peplau and Perlman, 1982). Weiss (1973), suggested that there are two types of loneliness that can co-exist or occur independently; social and emotional loneliness. Social loneliness occurs through isolation and is caused by a lack of social integration and embeddedness. This type of loneliness may, for instance,

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be experienced following relocation and could be best resolved by acquiring new contacts. Emotional loneliness on the other hand develops because of an absence of a reliable attachment figure, such as a partner. In line with attachment theory (Bowlby, 1969), the absence or loss of an attachment figure can only be substituted by another close and intimate bond and supportive friendships or social contact cannot compensate for the loss. The distinction between emotional and social loneliness may be particularly relevant for studies among older people because, due to the death of aging relatives and friends, the probability of having or finding an intimate attachment figure decreases with age thus incidence and prevalence of emotional loneliness in particular may be raised.

Some believe that loneliness can be conceptualized as a unidimensional entity (Russell *et al.*, 1980; Russell, 1996) and assume that the experience of loneliness is the same across all circumstances and causes. For example, the loneliness of a soldier for loved ones back home is equivalent to the loneliness of the dejected member of a dissolved intimate relationship.

The above conceptualizations of loneliness do not include a temporal component or refer to the frequency or severity of the experience in their definitions. To differentiate normal from pathological loneliness, the duration, frequency and severity of the experience are of key importance. Feelings of loneliness may either be persistent or short-lived. Transient feelings of loneliness are often situationally determined and normative similar to the depressive symptoms experienced in an adjustment reaction. However, chronic or more severe feelings of loneliness may be more of a cause for concern.

There would appear to be both state and trait aspects to loneliness. The state of loneliness that results from relocation may be remedied by reintegration with new contacts; however, there may exist in any one individual temperament or trait characteristics that militate against improvement in loneliness with restructuring of contacts. (Cacioppo *et al.*, 2006a), present an evolutionary theory for loneliness in which they conclude that loneliness is a human trait that has evolved and is heritable, suggesting that certain individuals are more vulnerable to developing feelings of loneliness in response to environmental triggers than others. In this theory, they postulate that those of our early ancestors who were inclined to form social connections, communicate and work together and share food had a selective advantage to survive.

In conditions of hardship, early hunter-gatherers who had a genetic disposition to experience loneliness

may have been more likely to return to share their food, shelter, or defense with their family and allies to diminish the pain of loneliness. Individuals with no such feelings of loneliness when separated from others may have roamed the earth better nourished than those who felt distressed by social separation, but the abandoned offspring—and the genetic predisposition of the parents—would have been less likely to survive. Thus loneliness as a trait ensured the survival of the ‘gene’ in accordance with Richard Dawkins’ ‘selfish gene’ theory at the expense of the individual’s own distress. This theory is backed up somewhat by recent genetic studies that have shown a significant degree of heritability for loneliness (Boomsma *et al.*, 2005).

Perhaps a more comprehensive way to view loneliness would be as a heterogeneous construct that can be defined in terms of the ‘bio-psycho-social’ model. One can have a biological predisposition to experiencing loneliness possibly related to inherited personality traits, while others may experience loneliness related to other psychological precipitants such as grief, or depression. Then from a social perspective one can experience loneliness if socially isolated. The advantages of explaining loneliness in such a way is that it highlights clearly the factors behind why the individual is experiencing loneliness and thus aids in deciding the most appropriate therapeutic intervention.

It is important finally, to distinguish between loneliness, ‘aloneness’, isolation and lack of social support. Being alone or ‘aloneness’ is not always viewed negatively by the individual. Furthermore, a person may experience loneliness while in the company of others. While loneliness by definition is an undesirable experience, aloneness or solitude may be desirable fostering creativity, facilitating self-reflection, self-regulation, concentration and learning. Social isolation is an objective measure of poor social integration without subjective appraisal. While there is overlap in these terms, they should not be used interchangeably as they reflect different constructs.

ASSESSMENT OF LONELINESS

Measures of loneliness, by definition, are generally based on subjective report. Self report measures, by their very nature, capture only the publicly declared experience of loneliness which may differ from the privately felt extent of the feeling.

The assessment of loneliness can vary from the use of a single question to the use of detailed self report instruments. The simplest way to assess loneliness is

to use a single question—‘Do you feel lonely?’ to elicit a self-rated scaled measure of loneliness with answers from ‘never’ to ‘often/always’. The advantages of a such self-report measure are that it is easy to use in clinical and research settings, is generally acceptable to people and it asks directly about feelings of loneliness. However, its simplicity is also a weakness. The question presumes an understanding of the concept of loneliness by patients and participants, when it is likely that the nature and meaning of the concept will vary among different groups of people and over time. The use of a single item self-report instrument also fails to differentiate between emotional or social loneliness, and the state and trait aspects of the experience. Although this may seem somewhat academic, when considering interventions or treatment for loneliness knowing the ‘type’ of loneliness can be important in treatment success.

Alternative self-report approaches to measuring loneliness have been developed using derivative questionnaire scales. Table 1 summarizes some of the main scales used along with their properties. The

University of California Los Angeles (UCLA) Loneliness Scale (Russell, 1996) is the most commonly used self-report loneliness instrument, preferred by both researchers and clinical practitioners. It was developed to assess satisfaction with social relationships. It is conceptualized as one-dimensional in its structure and the scale items tap both the frequency and intensity of salient aspects and events of the lonely experience (e.g. ‘How often do you feel alone?’). It measures loneliness as a unitary phenomenon that is the same regardless of what may have caused it. In order to reduce response bias, the word ‘lonely’ never appears in the instrument. Of note also the scale does not specify a time frame for respondents so it is unclear whether a state or trait measure has been designed.

Unlike the UCLA Loneliness scale, a number of the other scales (de Jong-Gierveld Scale, Wittenberg Emotional vs Social Loneliness Scale, the Russell Emotional and Social Loneliness Scale and the Social and Emotional Loneliness Scale for Adults) can measure social and emotional loneliness. In the de

Table 1. Loneliness scales and their properties

Name of scale	Author(s)	Brief description	Psychometric properties
de Jong-Gierveld Scale	de Jong-Gierveld (1987)	Eleven-item scale – six items assess for emotional loneliness while the other five assess social loneliness	α coefficients between 0.7 and 0.76 for six-item scale. Correlation between the six-item scale and 11-item scale very high – between 0.93 and 0.95
UCLA Loneliness Scale	Russell (1996)	Twenty-item scale, each item rated from 1 (never) to 4 (often)	High internal consistency $\alpha = 0.92$. Good test reliability ($r = 0.73$ after 12 months)
Social and Emotional Loneliness Scale for Adults	DiTommaso and Spinner (1993, 1997)	Thirty-seven-item seven-point Likert scale. Divided into subscales measuring romantic, family and social loneliness.	Internal consistency of 0.89. Moderate subscale intercorrelations.
Loneliness Rating Scale	Scalise <i>et al.</i> (1984)	Forty-adjective Likert scale – assesses four ten-item dimensions – agitation, dejection, depletion and isolation.	High internal consistencies for the four subscales ($0.82 < \alpha < 0.89$)
Wittenberg Emotional vs Social Loneliness Scale	Wittenberg (1986; in Shaver and Brennan, 1991)	Five-item Likert scales to assess social and emotional loneliness	Good internal consistencies for both subscales ($\alpha = 0.78$ and 0.76 respectively). The two Scales were moderately correlated ($r = 0.44$)
Russell emotional and Social Loneliness Scale	Russell <i>et al.</i> (1984)	Single items each consisting of a two sentence description of a type of loneliness (emotional or social) followed by a nine-point scale.	No internal consistency data reported due to item singularity. Authors report non-significant relation between item scores.
Differential Loneliness Scale	Schmidt and Sermat (1983)	Sixty-item true-false scale – divided into four subscales – romantic, friendship, family, and large group loneliness	High internal consistency $\alpha > 0.89$ with subscale estimates above 0.70

Jong-Gierveld Scale three dimensions of loneliness are identified: intensity, time perspective, and emotional characteristics. Of note, the 'Wittenberg Emotional vs Social Loneliness Scale' and the 'Social and Emotional Loneliness Scale for Adults' are both moderately correlated with the UCLA scale with the subsections measuring social loneliness especially correlated.

The Differential Loneliness Scale (DLS) identifies specific areas and dimensions of relationships in which loneliness might be experienced and measures the extent to which a person is satisfied or dissatisfied with each of four specific social relationships; romantic, sexual, friendship, relationships with family and relationships with larger groups or the community.

When it comes to deciding whether to use the 'single question self-report measure' or one of the loneliness instruments it is important to consider what it is you want to assess about the experience of loneliness. If it is simply to gauge the prevalence of loneliness then the self-report single question should be sufficient. However, if the type of loneliness the person is suffering from it important because therapeutic interventions are being considered, then a scale that assesses the types of loneliness is more appropriate. In a primary care setting where time is often limited, use of the 'single question' is time efficient and will identify people who are experiencing loneliness and alert the doctor to a potential problem that needs looking into. In psychiatry clinics or research settings, the loneliness scales can be used to characterize the quality of loneliness in more detail.

EPIDEMIOLOGY OF LONELINESS

Prevalence

British community studies have reported rates of loneliness among those aged 65 + of between 5–16% (Sheldon, 1948; Townsend, 1957; Tunstall, 1966; Townsend, 1968; Hunt, 1978; Bond and Carstairs, 1982; Qereshi and Walker, 1989). The median reported rate is approximately 9–10% (Victor *et al.*, 2000). A more recent study found that 7% were often or always lonely (Victor *et al.*, 2005). In an Irish context, the ongoing Dublin Healthy Ageing Study showed 10% reported being often or always lonely at the baseline assessments (O'Connell *et al.*, unpublished data).

Gender

Most studies found that women report loneliness more commonly than men, although some have found no gender differences (Andersson, 1982; Peplau and

Perlman, 1982; Qereshi and Walker, 1989). Several interpretations of these differences have been suggested. Factors such as older age, greater likelihood of being widowed and depression, are all more common in women as well as being individually associated with loneliness and thus they can confound the findings that loneliness is more common in women. It has also been proposed that there is also a gender bias in self-disclosure—i.e. men may be less likely to admit feelings of loneliness.

Marital status

The group that reports the highest frequency of loneliness is non-married males followed by non-married females, and then married females and finally married males (Andersson, 1990). While this association with different demographic groups is not entirely consistent and exceptions do occur, these findings would appear to indicate that marriage is somewhat protective against loneliness, concurring with Weiss's view of emotional loneliness occurring in the absence of a reliable attachment figure such as a spouse.

Bereavement

Bereavement in the elderly appears to be a major risk factor for the development of loneliness (Perlman and Peplau, 1984; Wenger *et al.*, 1996; Victor *et al.*, 2005). It is plausible that loneliness can result from the death of a loved one through the loss of an attachment figure and then the state of being widowed in which the person may live alone and have no replacement attachment figure.

Age

There is no clear relationship between loneliness and increasing age. In fact, self reported feelings of loneliness may be actually higher in adolescents. When the prevalence figures are plotted as a curve the proportions of different age groups reporting loneliness assumes the character of a shallow 'U' (Peplau *et al.*, 1982; Andersson, 1990, 1993). Thus, although the data is less robust, it seems as if there is an increase in loneliness in the highest age-groups—from approximately age 75 (Perlman and Peplau, 1984). The increase in loneliness in the higher age groups might be explained by higher incidence of emotional type loneliness as a result of increased likelihood of widowhood (with resultant loss of attachment figure). It may also be possible that similar to late onset depression that brain abnormalities (deep white matter

changes, atrophy) plays a role in the person experiencing more loneliness the older they are. Research into such a possibility is lacking but certainly may be worth pursuing.

Genetic/personality factors

There is some evidence that loneliness can be determined by genetic and temperament factors. In one study, individual differences in loneliness demonstrated considerable temporal stability and heritability with an estimate of heritability being 48% (Boomsma *et al.*, 2005). Cacioppo *et al.* (2006a) looked at the possible association between loneliness and personality type and found that higher levels of loneliness were found in individuals with lower levels of extraversion and higher levels of neuroticism. Preliminary data from the ongoing Dublin Health Ageing study also indicates that loneliness (measured using the single question—‘Do you feel lonely?’) is associated with higher scores of neuroticism even when controlled for depressive symptoms (O’Connell *et al.*, unpublished data).

Other risk groups for loneliness have been identified, examples of which are: single parents, family caregivers, unemployed, low level of education, poor income, people who have moved recently, people who live alone, poor vision and loss of hearing (Perlman and Peplau, 1984; Savikko *et al.*, 2005).

While the majority of these risk factors are not modifiable (gender, temperament, bereavement), as is the case in depression, they can help to identify at risk groups for early intervention.

LONELINESS AND DEPRESSION: CHICKEN OR SCRAMBLED EGG?

Depression and loneliness in older people are strongly associated and often co-occur (Creecy *et al.*, 1985; Hansson *et al.*, 1986; Heikkinen and Kauppinen, 2004). Furthermore, loneliness is a consistent and strong risk factor for depression. However, in spite of the overlap, loneliness and depression are considered to be distinct entities. From a clinical perspective, it is well known that older people who are lonely will often present with depressive symptoms but depressed individuals do not always report feeling lonely. Factor analytic studies also provide some support the idea that depression and loneliness are separate constructs (Cacioppo *et al.*, 2006b).

Table 2 summarizes the main studies that have examined loneliness as a potential risk factor for depression. Prince *et al.* (1997) explored the relation-

ship between social support deficits, loneliness and life events as risk factors for depression in the elderly and found that frequent loneliness was one of the strongest cross-sectional associations with depression. Further cross-sectional studies have been carried out that have looked at specific groups in the elderly namely people in independent living retirement communities and elderly males respectively (Alpass and Neville, 2003; Adams *et al.*, 2004).

Loneliness was again significantly associated with depression and both of these studies indicated that loneliness was a potential risk factor for depression. All of these studies point to a definite association between loneliness and depression but because of their design are unable to indicate whether loneliness causes depression or depression causes loneliness, or indeed whether loneliness is simply part of the depressive syndrome.

Longitudinal studies are more helpful in establishing whether loneliness is firstly separate from depression and secondly whether it is an actual risk factor for depression. Green *et al.* (1992) carried out a longitudinal study over 3 years and found that feelings of loneliness were significantly associated with development of depression 3 years later. Heikkinen and Kauppinen (2004) in a 10-year longitudinal study on very old Finnish adults found that loneliness predicted long term trajectories in depressive symptoms. In a more recently published study, the above finding was extended by looking at loneliness as a specific risk factor for depression using a cross sectional and longitudinal approaches in a sample of adults (Cacioppo *et al.*, 2006b). In the cross-sectional arm of the study, higher levels of loneliness were associated with higher levels of depressive symptoms, independent of the effects of age, gender, ethnicity, education, income, marital status, social support, and perceived stress. In the longitudinal arm of the study which was carried out over 3 years loneliness was again associated with more depressive symptoms, independent of demographic covariates, marital status, social support, hostility and perceived stress. The analysis showed reciprocal influences over time between loneliness and depressive symptomatology, suggesting that loneliness and depressive symptomatology can act in a synergistic way to diminish well being in older adults.

LONELINESS AND PHYSICAL HEALTH STATUS

As well as the more apparent connection between loneliness and psychological and psychiatric morbid-

Table 2. Loneliness as a risk factor for depression

Authors	Type of study	Measure of loneliness	Size of study	Main findings
KB Adams, S Saunders and EA Auth	Cross-sectional	UCLA Scale	234 participants (53% response rate)	Loneliness was a risk factor for depression using multiple regression compared with other variables.
J T Cacioppo, M E Hughes, L J Waite, LC Hawkey, R A Thisted	Cross-sectional and longitudinal	UCLA Scale	Cross sectional study—1,945 participants—54 + Longitudinal study—over 3 years 212 cases	Study 1 and 2—Higher levels of reported loneliness associated with higher levels of depressive symptoms.
F M Alpass, S Neville	Cross-sectional	UCLA Scale	217 men (72.3% response)	Strongest relationship to depression using regression analysis was loneliness Loneliness (but not social supports) related to depression
M L Stek, D J Vinkers, J Gussekloo, A T F Beekman, R C van der Mast, r G J westendorp	Cohort regular 1 year follow-up	De Jong Gierveld Scale	599 (87% response)	Mortality risk of depression with perceived loneliness was two times higher than normal, with no significant mortality risk for depression in absence of loneliness
P Tikkainen and R-L Heikkinen ⁽³⁴⁾	5 year cohort	Single item question—'Do you feel lonely?'	262 (92%response), with 5years later 148 patricipants.	Lonely people had significantly more depressive symptoms at baseline and at follow up. Social integration explains loneliness but not depressive symptoms.
Green BH, Copeland JR, Dewey ME, Sharma V etal	3 year cohort	Single item question—'Do you feel lonely?'	1070 participants	Low life satisfaction, loneliness and smoking were associated with development of depression after 3 years. Multivariate analysis confirmed their independent effects.
Prince MJ, Harwood RH, Blizard RA, Thomas A and Mann AH	Cross-sectional	Single item question—'Do you feel lonely?'—extracted from AgeCat program.	654 participants interviewed	Loneliness strongly associated with depression – Odds Ratio 12.4 (7.6–20.0)
Heikkinen R and Kauppinen M	10 year cohort	Single item quesection—'Do you feel lonely?'	337 at baseline, 131 at 10 year follow-up	Loneliness predicted depressive symptomatology

ity, loneliness appears to be a risk factor for poor physical health. (Stek *et al.*, 2004) showed that while loneliness on its own does not affect mortality rates, it significantly increases mortality rates in the elderly when it co-exists with depression. The mechanism for this effect on mortality is unclear but may be mediated through altered immune or physiological responses.

Table 3 summarizes the studies that have been carried out examining the association of loneliness with various physiological and immune measures.

Loneliness is associated with hypertension, poor sleep and abnormal stress responses (Cacioppo *et al.*, 2002a, 2002b; Stepoe *et al.*, 2004). These findings suggest that loneliness is associated detrimentally with physiological and immune stress responses that may account for the excess cardiovascular morbidity seen in people who are lonely. Although all of these studies

controlled for depression as well as other lifestyle variables, none of them controlled for anxiety, which could be a confounding factor.

LONELINESS AND COGNITIVE DECLINE

There have been a number of studies that examined whether loneliness is a risk factor for cognitive decline. As part of the Helsinki Ageing study Tilvis *et al.* (2004) found that the subjective experience of loneliness could over time result in greater cognitive decline in the elderly than people who are not lonely. More recently Wilson *et al.* (2007) analysed the association between loneliness and Alzheimer's disease in 823 older adults over a 4-year period and found that the risk for developing Alzheimer's dementia was substantially increased in those who

Table 3. Relationship between loneliness and physiological measures

Authors	Physical health measure	Loneliness measure	Findings associated with loneliness
Cacioppo JT, Hawkley LC, Crawford E, Ernst JM, Burleson MH, <i>et al.</i> Hawkley LC, Masi CM, Berry JD, Cacioppo JT	Blood Pressure	UCLA Scale	Increased systolic Blood pressure in the elderly.
Cacioppo JT, Hawkley LC, Bernston GG, Ernst JM, <i>et al.</i> Cacioppo JT, Hawkley LC, Crawford E, Ernst JM, Burleson MH <i>et al.</i>	Sleep	UCLA Scale	Reduced time in bed spent asleep. Increased wake time after sleep onset. Reduced sleep quality, increased daytime sleepiness
Stepoe A, Owen N, Kunz-Ebrecht SR, Brydon L Sorkin D, Rook KS, Lu JL	Neuroendocrine/ immune system Heart condition status	UCLA Scale UCLA Scale	Increased fibrinogen and natural killer cell response to stress Loneliness associated with 3-fold increase in odds of having a heart condition.

were lonely as compared to those who were not lonely, even when controlling for the level of social activity. At autopsy, loneliness during life was not actually related to the severity of Alzheimer's disease pathology. It would seem that loneliness may increase the risk of clinical expression of dementia for the same degree of Alzheimer's neuropathology.

LONELINESS AS A TARGET FOR THERAPEUTIC INTERVENTIONS

Loneliness is associated with adverse health outcomes, including mortality, depression, poor sleep, systolic hypertension, heart disease and cognitive decline. The direction of causality is unclear as the majority of the evidence comes from cross sectional studies and therefore more longitudinal studies are needed to further elucidate potential mechanisms of causation. However, we would feel also that further research should be focused on possible interventions against loneliness. A number of different intervention approaches for loneliness have been suggested in the past ranging from increasing social supports to psychotherapy approaches, however the vast majority of these interventions have not been adequately trialed for effectiveness. Research into interventions for loneliness should be based upon a clear model of loneliness. Most interventions that have been proposed in the past seem to be focused more towards treating the social type of loneliness or even more confusingly social isolation. Future research should, therefore, seek to differentiate clearly between loneliness and isolation as well as differentiating between the two types of loneliness along the bi-dimensional model of loneliness as suggested by Weiss. The bi-dimensional approach to loneliness is advantageous in that it differentiates between the potential causes of

loneliness and thus can help direct to more appropriate interventions depending on the type of loneliness. Further questions that research should seek to address include whether the different types of loneliness predict different outcomes and different responses to interventions. For example, it is easy to envisage people with emotional loneliness not responding as well to increased social supports compared to people who have social loneliness. Novel interventions should also be trialed such as making use of modern technology such as the Internet and programs such as Skype[©] whereby the person can have visual as well as verbal contact. Research could also assess whether untreated co-morbid loneliness plays a key role in treatment-resistant depression and if so what interventions are required to address the loneliness. From a clinical perspective based on our current knowledge we would recommend that loneliness should be sought for in any medical/psychiatric assessment, particularly if the patient is also depressed. Secondly, seeking potential reasons for this loneliness during the course of the clinical history can lead to a better overall understanding of the patients' problems. This can also help to clarify the type of loneliness which can focus the doctor on possible intervention strategies.

CONCLUSIONS

Loneliness is common in older people and is associated with adverse health consequences, both from a mental and physical health point of view. It is an area that has been relatively neglected in the medical literature. The current evidence as outlined in this review would support the initiation of appropriate intervention strategies that target loneliness, based on a clear understanding of the construct of loneliness as outlined in this review.

KEY POINTS

- Loneliness has been relatively neglected as a construct in old age psychiatry.
- Loneliness is strongly associated with depression and may be an independent risk factor for depression.
- Loneliness has been linked detrimentally with a number of physical health measures as well worse cognition.
- There is a need for evidence based interventions.

An increased understanding into the complexities of loneliness, its causes, effects as well as possible interventions may lead to improved patient care as well as better health outcomes, quality of life and functioning in older people.

CONFLICT OF INTEREST

None known.

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