

Boundaries and Dreams

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Abstract

This paper reviews and summarizes a number of published studies as well as recent unpublished work by the authors on Boundaries (Thin vs Thick Boundaries) and various aspects of dreaming. Analysis of data by groups as well as by individuals demonstrates a surprisingly high correlation between thinness of boundaries and dream recall frequency. Thin boundaries appears to be the only personality measure clearly related to dream recall frequency.

We also demonstrate a relationship between thin boundaries and dream content. Dreams of persons with thin boundaries are rated more dream-like, more emotional, and more bizarre in a number of studies. Thin boundaries are correlated especially with Central Image Intensity -- a measure that is elevated in powerful dreams, dreams after traumatic events, and dreams after 9/11/01.

These results strengthen our view that the "trait" continuum running from very thick boundaries at one end to very thin boundaries at the other is closely related to the "state" continuum running from focused waking activity at one end, through waking fantasy and daydreaming, to dreaming at the other end.

Introduction

We will first discuss the concept of Boundaries in the Mind, and then relate boundaries to dream recall frequency and aspects of dream content.

Boundaries refers to thickness or thinness of boundaries, intensively studied over the past twenty years, and measured by the Boundary Questionnaire (BQ) (Hartmann 1989, 1991). The basic underlying notion is an obvious one. No matter how we think of the content of our minds — whether we think in everyday terms of thoughts, feelings, memories; in cognitive psychology terms of perceptual, semantic and memory processes (or “modules”); or in psychoanalytic terms of ego, id, superego, defenses, etc. — we are speaking of parts, regions or processes, which in some sense can be considered separate from one another, and yet which are obviously connected. The boundaries between them are clearly not absolute separations. The boundaries can be relatively thick or solid on the one hand, and relatively thin or permeable on the other hand.

Psychologists have explored many different aspects of boundaries including perceptual boundaries, boundaries related to thoughts and feelings, boundaries between states of awareness or consciousness, sleep-dream-wake boundaries, boundaries related to memory, body boundaries, interpersonal boundaries, boundaries related to sexual identity and other forms of identity, group boundaries, and boundaries in opinions and judgements (table 1). All this is discussed in detail elsewhere (Hartmann, 1991; Hartmann, Harrison, Zborowski 2001).

The concept of thick versus thin boundaries as a personality measure becomes most clear if we examine the many kinds of boundaries, as in table 1, and consider extreme examples for clarity. A person who has very thick boundaries in all senses would be someone with a sharp sense of focus, who can easily concentrate on one thing while ignoring others. This person does not experience synesthesia, keeps thoughts and feelings entirely separate (“I don’t let my feelings get in the way of my thinking”), and is absolutely clear about when s/he is awake, or asleep or dreaming, experiencing no in between states. This person has a clear sense of the separation of past, present, and future (“that was then, this is now”), a very definite sense of space around him/herself (“this is my space, this is yours”), and a clear, delineated sense of sexual identity (“I am a man, you are a woman, vive la difference.”) The person will have a definite group identity (“this is my group, we do such and such; other groups are totally different) and will tend to see the world in terms of black and white, us versus them, good versus evil.

A person at the other extreme, a person with thin boundaries in all senses, may experience some synesthesia, will tend to let a lot of sensory material in at once, and may have difficulty focusing on one part of the input. This person will be aware of thoughts and feelings together (“I can’t imagine a thought without a feeling”), and will often experience states of being half-awake and half-asleep, or will become deeply immersed in daydreaming or in reverie, so that at times the boundary between real life and fantasy may be unclear. There will be less sense of clear body boundary and personal space.

This person may be very aware of the past, and have it blend with the present (“I am grown-up, but in a lot of ways I’m still a child”). Similarly, this person will accept mixtures in sexual identity (“I am a man, but there’s a lot of feminine in me too”). He or she will not feel solidly a member of one group, but may be an individual taking part at times in many different groups, or perhaps a “citizen of the world.” In judgments or opinions about the world, this person will tend to think in terms of shades of grey, rather than black and white (“it all depends, s/he’s good in some ways and bad in others,” “it’s different at different times,” and so on).

These of course are extreme examples, lying at the two ends of the continuum running from very thick to very thin boundaries.. Most of us are somewhere in between, and we may have a mixture of thin and thick boundaries. However there is a considerable consistency statistically: people who score very thick on one category of boundaries are likely to score thick on others too. The thick-to-thin continuum has been quantified by the Boundary Questionnaire(BQ) The BQ is a 138-item questionnaire that has now been taken by perhaps ten thousand persons, and has been related to many other variables such as occupation, gender, and types of psychological problems that may occur (Hartmann, Harrison, Zborowski 2001). Here we consider the relationship of boundaries to various aspects of dreaming.

Boundaries and Dream Recall Frequency

One of the most quantifiable, and most studied measures of dreaming is dream recall frequency (drf) -- usually measured by a single question, such as “How often do you recall a dream (per week)?” The respondent either is asked for a numerical answer, or is given a multiple-choice question (never, less than once per month, etc) Occasionally a study asks participants to keep a dream log, writing down anything they remember each morning, and then tabulating how often per week or per month a dream is reported.

Dream recall frequency (drf) shows a clear relationship to some biological variables. For instance it has been well established since the discovery of REM sleep in the 1950s that awakenings from REM results in higher dream recall than awakenings from NREM sleep. Likewise age shows a definite correlation with drf – a gradual increase in drf in childhood, then a plateau, followed by a gradual decline in drf with increasing age. (Foulkes 1982. Giambra et al. 1996.) And studies of gender have generally found slightly higher drf in women than in men (Giambra et al 1996, Schredl and Piel 2003).

A number of “state” factors affect drf: for instance stressful events usually decrease drf, while starting psychotherapy or psychoanalysis, or taking part in a study on dreaming increase drf. (Reviewed in detail by Schredl, in press).

However it has been hard to answer the question generating the most interest: “Who remembers more dreams?” -- in other words the “trait” factors or personality factors that may correlate with drf. A great many studies over the years have led to sparse and sometimes contradictory findings (see Cohen, 1974, Schredl and Montasser, 1996-97, Blagrove and Akehurst 2000 for reviews). For instance, there is no correlation or a very inconsistent correlation between drf and Eysenck’s three personality factors Extraversion, Psychoticism and Neuroticism. There is no clear correlation with Repression, measured in a number of ways. In fact there have been two papers published emphasizing the near ubiquity of negative results on personality factors related to drf (Blagrove and Akehurst, 2000; Levin et al, 2003).

Boundaries (thinness of boundaries) is the single clear exception. It has been shown repeatedly that having thin boundaries definitely correlates with drf (Table 2; references in table). Significant results have been found in a number of different populations, and with different measures of drf. The overall measure of thinness of boundaries, called SumBound usually correlates with drf at $r = .20$ to $r = .50$.

Since the BQ measures thinness of boundaries in twelve predefined categories, we reanalyzed all our data on which the BQ and drf are available ($N = 1359$) to determine their relationship to drf. There was a highly significant positive correlation with drf for eleven of the twelve categories (table 3).

Looking at the data another way, persons who recall dreams frequently (64 persons reporting seven dreams per week or more) were compared with 69 persons who reported seldom or never recalling dreams. Results show highly significant differences ($p < .001$) between these two groups on SumBound, and also on all twelve categories of boundaries (Hartmann, Elkin and Garg, 1991). These two groups did not appear obviously different on interviews. And the two groups showed no significant differences on any of the standard MMPI scales. Thus the results cannot be explained by differences in pathology or in the personality factors picked up by the MMPI.

The BQ does involve a few questions dealing directly with sleep, waking and dreaming, so perhaps these questions inordinately influenced the positive relationships found. To correct for this we redid the correlations, omitting any questions in the BQ dealing with any aspect of sleep, waking, dreaming or daydreaming. This had only a minimal effect on the results: the correlation in our large overall group fell from .40 to .37 (still $p < .001$).

If, indeed, there is a real relationship between thinness of boundaries and drf, one can ask why the correlations reported are so moderate, accounting for only a small fraction of the total variance. One could answer, accurately but not especially helpfully,

that this is unfortunately the case with most correlations involving subjective data such as answers to questionnaires. There is simply a lot of background variability or “noise” in the system. However we don’t have to stop there. If there is simply too much “noise,” we might see whether reducing the “noise” will increase the correlations. We did this in two separate ways.

One important type of “noise” inheres in the question “How often do you recall a dream?.” Based on interviews with a number of these respondents, we know that most people have given little thought to their dreaming, and will provide a quick guess such as “maybe once a week” or “almost never” which may bear only a slight relationship to what they would say if they had considered the question at length, or were asked to keep a dream log. A study of this point in fact finds great differences between drf from a questionnaire and from a dream log, the dream log usually showing higher drf (Schredl 1991). To reduce this source of noise, we studied a group who have given a great deal of thought to their dreams -- members of the International Association for the Study of Dreams. For these people, the question about drf would be one they have thought much about, and they could probably answer it more accurately. In this group (N= 42) we found a correlation of $r = .60$ between SumBound and drf, which fell only slightly, to $= .57$ when all sleep/dream/wake questions were removed from the BQ. Thus reducing this one source of noise definitely increases the strength of the correlation.

We also attempted to reduce noise in another way. We have been studying Boundaries for some years, and our large group of about two thousand respondents includes some well-defined smaller groups, including several groups of students from different colleges, and also some groups we had studied specifically because we predicted that they would differ on thinness of boundaries. For instance we have a group of naval officers, who as we expected, turned out on the average to score relatively thick on the BQ, and several groups of art students who on the average scored relatively thin. Within each group there was of course considerable variation in SumBound, and also considerable variation in drf, which was available in our records for almost all respondents. So we attempted to reduce this variability or “noise” by examining the correlation of SumBound and drf across groups, rather than across individuals, using for each group a single point representing the mean value for SumBound and for drf.

The results are in Figure 1, showing a surprisingly high correlations of $r = .924$ ($p < .001$) between Sumbound and drf. This seems almost too high to be believed., so we immediately looked for possible problems in the data. There is at least one possible confound in the data -- the fact that the groups included two groups of nightmare sufferers. Some would argue that nightmare sufferers are bound to have a high drf. Actually this is not entirely true. Nightmare suffering (distress) is not highly correlated with drf or even with nightmare frequency (Belicki et al. 1991). But even if high drf is considered likely in a nightmare sufferer group, the high SumBound scores are not obvious, but constitute an early finding of our work. In any case, to be conservative, we re-ran the correlation without the two nightmare groups, and found in the remaining eight groups a correlation of $r = .971$ ($p < .001$) – slightly higher than before! So omitting the nightmare groups made no difference in the high correlation.

In case we had introduced bias by studying only groups we had chosen as “well-defined groups,” we ran another correlation, this time including all groups available to us, who had data on drf, including some very mixed or ill-defined groups, such as a group of all patients seen at a New England sleep disorders center regardless of diagnosis (N = 514). Including these new groups, the correlation of SumBound and drf across all fourteen groups was $r = .897$ ($p < .001$) -- almost as high as before. The fact that the correlation is somewhat lower than before is predictable, since in our effort to be inclusive we now re-introduced some of the “noise” we had tried to eliminate by using only mean values for well-defined groups.

I am not suggesting that the correlations of $r = .924$, $.971$, or $.897$ should simply be accepted instead of the usual more modest correlations found across subjects. The present figure is measuring something slightly different -- a correlation across groups -- rather than the more usually computed correlation across individuals. Still, this different way of examining the data, which certainly reduces “noise,” does suggest that there is something meaningful in the SumBound vs. drf relationship. Perhaps other personality questions where many different groups are available might be examined in the same way.

In any case these two very different ways of reducing “noise” did results in findings which appear to strengthen the hypothesis of a solid relationship between SumBound and drf.

Boundaries and Dream Content (Global Measures)

There have been several studies examining the relationship of Sumbound or other boundary scores to dream content. Hartmann, Elkin and Garg, in 1991, compared ten dreams (one per person) of persons with very thick boundaries, to ten dreams of persons with very thin boundaries, using a number of standard dream content measures. Dreams of the thin subjects turned out to be longer, and were scored significantly higher on “Interaction between characters,” “Amount of Emotion,” “Vividness,” “Nightmare-likeness,” “Dreamlikeness,” and “Bizarreness.”

A study of 50 students who kept dream diaries (Schredl, Kleinferchner and Gell, 1996) described similar findings, using three measures of dream emotion. Thinness of boundaries was significantly correlated with intensity of dream feelings, and there was a trend towards a correlation with amount of negative feeling, and also with amount of positive feeling.

A study of 80 patients at a sleep disorders center who had filled out the BQ as well as estimating their drf (Hartmann, Rosen and Rand 1998) investigated measures similar to those of the first study above, and the findings were very similar. There was a significant positive correlation between SumBound (thinness of boundaries) and length of the dream, vividness, detail, and emotionality, and nightmare-likeness.

(There is a much debated but unresolved question as to whether dream content measures should be corrected for dream length, thus measuring, for instance, dreamlikeness per 100 words of dream. Though such a correction makes sense for “content analysis” scores such as “number of characters,” most researchers believe the correction cannot meaningfully be used for the global measures. To be very conservative, the paper (Hartman, Rosen and Rand, 1998) presents the results both ways. The results are similar, using the “length-corrected” scores with lower significance levels.)

Boundaries and the Central Image (CI) of the Dream

Many recent studies emphasize the importance of the Central Image (CI) of the dream. This Central Image concept derives from studies of dreams after a traumatic event, such as the frequent “tidal wave dream” found after many different kinds of trauma. In such dreams the powerful image of the tidal wave is not related to what actually happened. The image seems to portray the dreamer’s powerful emotion: I am terrified. I am overwhelmed. These central images were originally called “Contextualizing Images” (CIs) since they pictured or provided a “picture-context” for the emotion (Hartmann 1996, 1998; Hartmann et al. 1999). However that name was not popular, so the term generally used now is “Central Image”, keeping the initials CI.

The presence or absence, and intensity, of the CI can be scored reliably (Hartmann 1998; Hartmann et al. 1999). CI intensity has turned out to be an important measure in many studies. CI intensity is higher in dreams after trauma than before, or in those not traumatized (Hartmann et al. 2001). It is higher in students who report any kind of past abuse, compared to those who report no abuse (Hartmann et al. 2001). It is higher after 9/11/01 than before, in a systematic study of persons who recorded their dreams for years including the period before and after 9/11 (Hartmann & Basile 2003).

We have recently found that CI intensity is higher in “dreams that stand out” than in “recent dreams”(Hartmann & Kunzendorf, in press). CI intensity is higher in dreams considered “important” by the dreamer compared to dreams considered “unimportant” or “less important”). It is also unusually high in dreams labeled by the dreamer as “especially significant.”(Hartmann et al. 2006). And “home dreams” (reported as recent dreams by the dreamer) appear to score higher on CI intensity than laboratory-collected dreams from REM or NREM sleep. As expected REM-awakenings had higher CI intensity than NREM-awakenings (Hartmann & Stickgold 2000).

Thus CI intensity in the dream appears to be related to “big,” “significant” “memorable” dreams and to emotional arousal or emotional interest. This is consistent with personal and anecdotal evidence: if we read about “memorable” dreams, such as Jung’s dream of a huge phallic pillar in a basement, which he says remained with him his

whole life, what is remembered is usually one powerful image. Similarly Freud reports one dream that stayed with him since childhood, involving men with birds' beaks carrying his mother's body. Trying to recall our own most memorable dreams also emphasizes almost always a powerful central image. Only rarely is a dream memorable because of an interesting complex plot, and even more rarely because of written or spoken words, though all of this happens occasionally.

Consistent with this, we have found in clinical situations that if a patient is asked to re-tell an important dream, weeks or months after the original telling, what remains constant is a powerful image, while the details around it often change.

Turning to Boundaries, one study of 286 students demonstrated a clear relationship, with higher CI intensities in recent dreams reported by students with thin boundaries (high SumBound scores) (Zborowski et al. 1998). Confirming this, we found in a recent study (Hartmann and Kunzendorf, in press) that a group of students chosen on the basis of having thin boundaries (high Sumbound scores) had higher CI intensity than thick-boundary students in their recent dreams, and also in "dreams that stands out." However we found that there was no difference between thick and thin students in dreams they reported as the earliest dream they could remember. These "earliest" dreams were reported as occurring at similar ages (6-7 years old) in the two groups. This suggests that perhaps we all had relatively intense imagery at age 6-7, but that the intensity decreases over the years in those with thick boundaries as adults, but remains high in those with thin boundaries.

Boundaries and Daydreaming -- the Focused Waking-to-Dreaming continuum.

As we have seen above, people with thin boundaries appear to remember more dreams, and also longer, more dream like and more intense or powerful dreams. Is this relationship specific to dreams or might it be part of a wider relationship between boundaries and mental imagery or boundaries and mental processing in general.

At least one study suggests that daydreaming also relates to boundaries. In a group of 40 Students who each provided on recent dream and one recent daydream, we found that overall dreams were scored as far more "dreamlike" and "bizarre" than daydreams. However dreams of thin-boundaried students were scored more dreamlike and more bizarre than dreams of thick-boundaried students. Daydreams showed the same pattern. The differences were sufficiently large so that the **daydreams** of thin-boundaried students were scored just as dreamlike and just as bizarre as the **dreams** of the thick-boundaried students (Hartmann et al. 2001). This suggests a continuum

between daydreams and dreams, with a thin-boundaried students shifted towards more dream-like and bizarre imagery.

The idea of a continuum between daydreaming and dreaming is not new. Research by Reinsel et al. (1992) demonstrates that daydreams can be as bizarre as dreams, and work by Singer (1993) demonstrates that daydream imagery can be as metaphoric as dream imagery.

We believe all these results can most fruitfully be understood in terms of a broad continuum of mental functioning, running from focused waking at one end, to looser waking thought, reverie, daydreaming and then dreaming at the other end. (Hartmann 1998, p 90) At first glance, dreaming can seem totally different from thought or daydreaming. Dreaming appears to involve total involvement in an imagined world, and lack of control over what happens. However these are not absolute distinctions. As we have seen above, daydreams are sometimes as dreamlike and as bizarre as dreams . Numerous clinical interviews have convinced us that some people experience reveries and daydreams that become as real as dreams. In our studies of people with frequent nightmares, we found that many of them had frightening daydreams as well, and would speak of “daymares:-- meaning daydreams that got out of control and became increasingly terrifying (Hartmann 1984). And the copious literature on lucid dreaming illustrates the fact that we often do have some control even in our dreams, and in fact there is great variation in the degree of lucidity and control over the dream (Barrett 1992).

Furthermore we know that very dreamlike material sometimes occurs at sleep onset (Vogel et al. 1966) or under conditions of sensory isolation (for instance Reinsel et al. 1992) and there is disagreement about whether such material should be considered dreaming.. All of this suggests that for many purposes it is useful to think of a continuum of mental functioning rather than an absolute divide between dreaming and waking cognition. At the left-hand end of the continuum, in focused waking, our sensorium, our dynamic imagery, deals with sensory input and also with words, numbers, mathematical symbols -- whatever our task demands. We process material serially, we tend to think in straight lines, moving logically from one thing to the next. We employ categories, keeping things in their places, and our thinking remains mostly within a region or subsystem. As we move to the right, through reverie and daydreaming towards dreaming, all this changes. There is less sensory input and we are less involved in a task. We process more loosely, more broadly, we think less serially, we make jumps from one subsystem to another.. This has been discussed in great detail elsewhere (Hartmann 1998).

It is striking that this focused waking-to-dreaming continuum bears considerable similarity to the continuum we have discussed previously, and above, from thick boundaries to thin boundaries. The waking-to-dreaming “state” continuum can be superimposed on the “trait” continuum of thick-to-thin boundaries. In other words,

regardless of our typical boundaries, we all function in a more “thick-boundary” mode when we are hard at work solving a math problem, and in a more “thin-boundary” mode when daydreaming and dreaming.

People characterized by thin boundaries overall tend to be more aware of, and be more comfortable in, the daydreaming/dreaming end of the continuum. This relates to our finding of a high correlation between thin boundaries and dream recall frequency.

Furthermore emotion has a greater influence on our imagery and mental processing as we move towards the dreaming end of the continuum (Hartmann 1998). This relates to our findings that people with thin boundaries have more powerful and emotional dreams, and that their dreams have more powerful central images – the part of the dream that seems to be most closely related to the underlying emotion.

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Table 1. Types of Boundaries

Perceptual boundaries
Between sensory inputs
Sensory focus or “bandwidth”
Around perceptual entities
Boundaries related to thoughts and feelings
Between two thoughts or two feelings
Between thought and feeling
Around thoughts and feelings (free association)
Boundaries between states of awareness or states of consciousness
Sleep-dream-wake boundaries
Between sleep and waking
Between dreaming and waking
In and around the dream
Daydreaming
Boundaries related to play
Boundaries related to memory
Early memories
Recent memories and memory organization
Personal past
Future plans
Boundaries around oneself (body boundaries)
Barriers against stimuli
The skin as a boundary
Posture and musculature as boundaries
Personal space
Interpersonal boundaries
Boundaries between conscious and unconscious and between id, ego, and superego
Defense mechanisms as boundaries
Boundaries related to identity
Sexual identity
Age identity: Between adult and child
Constancy of identity
Group boundaries
Boundaries in organizing one’s life
Boundaries in environmental preferences
Boundaries in opinion and judgments
Boundaries in decision-making and action

Table 2. Studies relating thin-ness of boundaries (“SumBound”) and dream recall frequency.

SumBound and Dream Recall

- “Thin boundaries” are positively correlated with dream recall in many studies:
- Hartmann 1991 (N = 600) $r = .40$
- Hartmann et al 1991 (SB w/o sdw) $r = .37$
- Cowen and Levin 1995 $F = 6.6$
- (freq. dreamers vs low recall dreamers)
- Schredl et al 1996 $r = .26$ (que)
- $r = .29$ (diary)
- Schredl et al 1999 $r = .30$ (que)
- $r = .26$ (diary)
- Schredl et al 2003 $r = .18$
- Zborowski et al 1998 $r = .12$
- Hartmann 2005 (unpubl. N=1236) $r = .29$

Table 3: Correlations between the twelve categories of boundaries and drf. (N = 1359)

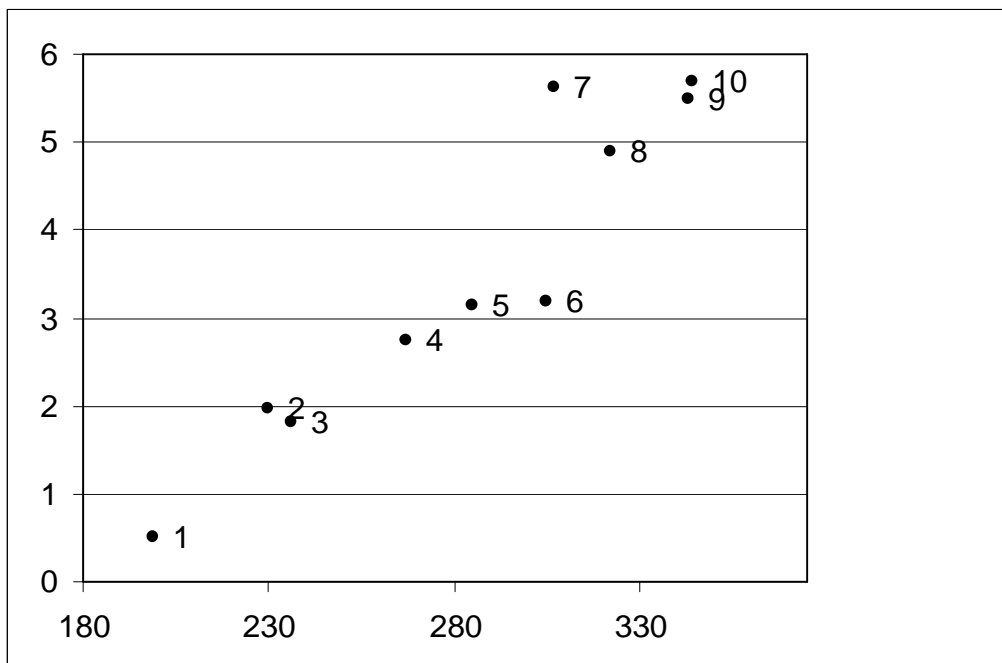
Category	r	p (two-tailed)
1. Sleep/wake/dream boundaries	.315	<.001
2. Unusual experiences	.248	<.001
3. Thoughts, feelings, moods	.182	<.001
4. Childhood, adolescence, adulthood	.125	<.001
5. Interpersonal	.101	<.001
6. Sensitivity	.157	<.001
7. Neat, exact, precise	.039	.151
8 Edges, lines, clothing	.137	<.001
9. Opinions about children and others	.097	<.001
10. Opinions about organizations	.082	<.003
11. Opinions about people, nations, groups	.122	<.001
12. Opinions about beauty, truth	.096	<.001

Table 4

*A Comparison of Frequent Dreamers (Seven or More Dreams per Week) and**Nondreamers*

	Frequent Dreamers		Nondreamers		<i>t</i>	<i>p</i>
	(N=64)		(N=69)			
SumBound Total	314	(SD=60)	232	(SD=40)	9.2	<.0001
Personal Total	208	(SD=48)	142	(SD=32)	9.2	<.0001
World Total	106	(SD=17)	89	(SD=17)	5.6	<.0001
Sleep-Dream-Wake	23	(SD=13)	8	(SD=7)	8.6	<.0001
Unusual Experiences	34	(SD=13)	15	(SD=9)	9.5	<.0001
Thoughts, Feelings, Moods	33	(SD=11)	24	(SD=9)	5.7	<.0001
Child, Adolescent, Adult	13	(SD=4)	10	(SD=4)	3.3	<.01
Interpersonal	27	(SD=6)	23	(SD=6)	3.7	<.001
Sensitivity	15	(SD=3)	12	(SD=4)	4.2	<.0001
Neat, Exact, Precise	21	(SD=7)	18	(SD=6)	3.4	<.001
Edges, Lines, Clothing	41	(SD=8)	33	(SD=8)	6.3	<.0001
Opinions about Children	23	(SD=5)	20	(SD=5)	3.8	<.001
Opinions about Organizations	26	(SD=6)	22	(SD=6)	4.4	<.0001
People, Nations, Groups	38	(SD=7)	32	(SD=8)	4.5	<.0001
Beauty, Truth	19	(SD=4)	16	(SD=4)	4.1	<.0001

Figure 1. Dream Recall Frequency versus SumBound across Groups



The X-axis represents SumBound (thinness of boundaries), the Y-axis represents dreams reported per week. Each point is the mean value for a group(see text).

Group 1 : People with a diagnosis of Alexythymia, N = 5. Group 2: Sleep Apnea patients at a Sleep

Disorders Center, N = 255. Group 3: Naval Officers, N = 18. Group 4: College Students at a New

England college, N = 49. Group 5: College Students at a North Carolina college, N = 197.

Group 6: Music Students at a New England college, N = 18. Group 7: People with Nightmares,

a research study, N = 12. Group 8: Members of the International Association for the Study of Dreams,

N = 42. Group 9: Museum School Students, New England, N = 20. Group 10: People with

Nightmares, another Research Study, N = 17. The correlation is $r = .924$ ($p < .001$)

