A Historical Context for Understanding “An Eye Roll Test for Hypnotizability”
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Abstract
Herb Spiegel was known for many professional and scientific achievements. He is may be best remembered for his discovery of the Eye Roll Sign (ERS) and its relation to innate trance capacity and the parallel creation and development of the Hypnotic Induction Profile (HIP). The present paper provides a historical context for understanding Herb’s 1972 publication of “An Eye Roll Test for Hypnotizability” which originally appeared in the American Journal of Clinical Hypnosis 38 years ago and is reprinted in this journal issue.

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A Historical Context for Understanding “An Eye Roll Test for Hypnotizability”

Herbert Spiegel, M.D. passed away peacefully in his sleep on December 15th, 2009. While Herb was known for a number of professional achievements, he is probably best remembered for his discovery of the relation between the Eye Roll Sign (ERS) and “hypnotic trance capacity” (Spiegel, 1972, p. 25) and for the related development of the Hypnotic Induction Profile (HIP: Spiegel & Bridger, 1970; Spiegel, 1973; 1974; Spiegel & Spiegel, 1978). Both the ERS discovery and the HIP underwent joint developmental processes which have not been fully explicated. The purpose of this introduction is to clarify this evolutionary process from a historical perspective from the beginning of Herb’s initial observations of the ERS, the publication of the ERS paper which is reprinted below (Spiegel, 1972) and the subsequent publication of Herb’s book Trance and Treatment: Clinical Uses of Hypnosis co-written with his son, David Spiegel, M.D. (Spiegel & Spiegel, 1978).

Discovery of the Relationship between the Eye Roll Sign and “Hypnotic Trance Capacity”

In 1965, while treating a patient for hysterical seizures, Herb found her to be extremely hypnotizable. He taught her to abort her seizures with a hypnotic strategy whenever she felt one coming on. Her ability to use the self-hypnosis exercise on her own at home freed her family from a previous need to provide constant observation. The patient, who gained mastery over the problem, was shortly independent of treatment and the need for supervision. She was in control of her life.

An educational videotape of her treatment was made through the Department of Psychiatry at Columbia University College of Physicians and Surgeons. After watching this video numerous times, Herb observed only the whites of her eyes were visible when she went into trance by looking up instead of closing her eyes. After working with numerous patients, he observed a difference in the amount of sclera revealed with the upward movement of the eyes. Sometime after Herb made these observations, he tried to hypnotize a patient he described as an obsessional man suffering from a thought disorder. He used an eye-fixation technique—looking at a spot in the ceiling. This man showed no sclera at all as he tried to look up while closing his eyes and was not at all hypnotizable.

Based on his observations of many patients, Herb began to notice differences in hypnotizability. There were also differences in symptom configurations and differences in the upward mobility of the eyes when responding to a hypnotic induction.

Development of the Hypnotic Induction Profile

Herb began to systemize a method for measuring both the ERS (on a 0-4 scale) and samples of behavioral (e.g., suggested arm levitation, post-hypnotic motor compliance) and psychological (post-hypnotic subjective sensations such as involuntariness, dissociation, returned sense of voluntariness in response to tactile cut-off signal, the degree of amnesia for awareness of the cut-off signal, and a sensory alteration of floating, lightness, or buoyancy), responses that later evolved into the 0-10 point Induction Score (IND; Spiegel & Bridger, 1970; Spiegel, 1973; 1974; Spiegel, Aronson, Fleiss & Haber, 1976; Spiegel & Spiegel, 1978).

The method for assessing the ERS is described in Herb’s 1972 Eye Roll paper (below). The method for scoring the items and calculating the 10 point IND score is most thoroughly explicated in Trance and Treatment (Spiegel & Spiegel, 1978). A revised 16 point IND score has been recently developed but will not be discussed here.

From 1966-1968, Herb began to standardize the procedures for administering the Hypnotic Induction Profile which included both the ERS and IND on thousands of consecutive patients. By 1968, the first version of the Hypnotic Induction Profile was ready to be tested
Frischholz, Nichols

on a subsequent, consecutive patient sample. From October 1968 through June 1970, 2,000 patients had been routinely assessed using the HIP and an early paper summarizing the results of these data were presented at the 13th annual meeting of the American Society of Clinical Hypnosis held at Miami Beach in 1970.

**HIP Profile Grades**

Besides the ERS and IND score, Herb developed a method for categorizing a person’s HIP performance based on specific configurations of ERS/IND scores. He called this method the HIP Profile Grade system.

The Grade aspect of the HIP Profile Grade system was the *quantitative* component of the configurational category score. It was based on an assumption that a zero Eye Roll indicates a person who has none of the underlying biological wiring to be able to experience trance. A higher Eye Roll score was speculated to signify a more complex underlying biological mechanism to experience trance. Hence, a person with an Eye Roll Sign of 4 was hypothesized to have a greater capacity to experience trance than a person with an Eye Roll Score of 1. The highest Eye Roll score one can observe is an Eye Roll score of 4 and the lowest Eye Roll score is 0.

Herb conceptualized three *qualitative* types of Profiles based on his HIP assessment. A Zero Profile (ERS=0; IND < 3.5) indicated that a person was not hypnotizable because he lacked the underlying biological wiring to experience trance. An Intact Profile indicated a person who had some type of underlying biological capacity to experience trance (i.e., an ERS > 0) and an ability to utilize that biological wiring (i.e., and IND > 3.5). A Non-Intact Profile indicated a person who had the underlying biological capacity to experience trance (i.e., an ERS > 0), but for some reason was unable to utilize this ability (i.e., an IND score < 3.5).

Herb further differentiated between two types of Non-Intact and Intact Profiles. The Soft Profile was a subtype of Non-Intact Profile which Herb conjectured to be an indication of a person who had the underlying biological capacity to experience trance but was “slightly” impaired from doing so. Test-retest studies indicated that with effective treatment, patients who initially displayed a Soft Profile would later be scored as having a Regular Intact Profile.

In contrast, the Decrement Profile was theorized to indicate a person who also had the underlying biological capacity to experience trance but was “severely” impaired from doing so. Hence, the degree of trance capacity impairment associated with a Soft Profile was “slight” or “transient” while the degree of impairment indicated by a Decrement Profile was theorized to be “severe.”

In addition, there were two types of Intact Profiles: a) a Regular Intact Profile; and b) an Increment Profile. A Regular Intact Profile was theorized to indicate a person who had the biological capacity to experience trance which was consistent with the complexity of their underlying biological wiring (as indexed by the ERS). In contrast, an Increment Profile was speculated to be a person who had a low or zero ERS (and hence little or no biological capacity to experience trance), but because of special motivation to cooperate with the HIP test administration procedure appeared to be extremely hypnotizable (e.g., IND score > 8.0).

Collectively, the HIP Profile Grade scoring system was based on Spiegel’s conceptualization that there were both different *quantitative* (ERS-IND) and *qualitative* (Profiles) degrees (Grades) and types (Profile Grades) of measured hypnotizability. For example, low hypnotizability could be due to little (e.g., a Grade 1 Intact Profile) or no latent inborn biological capacity to experience trance (i.e., a Zero Profile Grade) or due to an impaired ability to experience trance (i.e., the Soft or Decrement Profile Grade). In contrast, scores above 3.5 on the IND may indicate either a person whose ability to experience trance was
equivalent to their underlying capacity or a person who felt so strongly motivated to go along with the demand characteristics of the test situation (Orne, 1962) that their score was actually higher than indicated by their underlying biological capacity (i.e. a zero or low Regular Intact Profile Grade).

**Profile Scores as Predictors of Treatment Outcome**

Parallel to the development and standardization of the HIP, Herb had also developed a single treatment session for helping smokers quit this corrosive habit (Spiegel, 1970a; 1970b). In order to test the efficacy of this treatment method, Herb gave his patients self-addressed and stamped postcards so they could indicate whether they were completely abstinent from smoking post-treatment. In addition to assessing a client’s short-term treatment response, Herb also mailed out additional postcards to conduct more extensive long-term follow-up at six months post-treatment. Six hundred and fifteen cases were followed in this manner. Two hundred seventy one cases (44%) did not respond. Of the remaining three hundred forty four cases that did respond, one hundred twenty one patients reported on the postcard that they were completely abstinent since their treatment. Herb assumed that those patients who did not respond were treatment failures. Instead, he calculated the success rate for this single session treatment was 20% (i.e. 121/615). While his assumption about non-responders may not have been valid, it did provide a conservative estimate of the efficacy of his treatment method. However, an even more interesting finding was that the success rate for patients who earned intact HIP Profiles was significantly higher than the success rate for patients who earned non-intact HIP Profiles. In other words, patients who were found to be hypnotizable responded better to the single session treatment method for smoking than patients who were not found to be clinically hypnotizable. Additional data about the efficacy of this treatment method and its relation to HIP Profile scores was presented in *Trance and Treatment* (Spiegel & Spiegel, 1978). These data empirically confirm the predictive validity of the HIP Profile score in identifying those patients who are most likely to respond to this brief treatment method.

**HIP Manual Publication**

In 1970, the first HIP manual was published (Spiegel & Bridger, 1970) although Herb’s co-author participated more on the clerical details of this project than method development or data collection. This revised procedure which presented formal methods for administration and scoring took about 5-10 minutes to administer.

**Reconceptualization of Hypnosis**

Based on the development of the HIP over this 5 year period, Herb began to operationally conceptualize hypnosis as “a signal to a signal from another or to an inner signal, which activates a capacity for a shift in awareness in the subject and permits a more intensive concentration upon a designated goal direction. This shift of attention is constantly sensitive to and responsive to cues from the hypnotist or the subject himself if properly trained. More succinctly, hypnosis is a dynamic state of attentive concentration, even to the point of dissociation” (Spiegel, 1972, p. 25-26).
Herb’s 1972 definition of hypnosis was an expansion on his earlier definition regarding “the spectrum of hypnotic and non-hypnotic phenomena” (Spiegel, 1963). In 1963, Herb had considered other types of trance states (not the more general term altered states of consciousness) as internally similar to a hypnotic trance state but triggered by different internal and external stimuli. Nevertheless, he still considered the ability to enter any kind of trance state to be based on a person’s underlying biological wiring. Spiegel reiterated this theme in his 1972 paper (p.27): “Trance capacity is either genetically determined or learned so early in life at something like an imprint level that the circuitry is essentially physiological or structural rather than psychological (Spiegel, 1965).”

In closing his 1972 paper, Spiegel speculated that “hypnosis is characterized by a contraction of peripheral awareness and an increase in focal attention. The essence of hypnosis is related to the ability to concentrate in an attentive responsive manner, even to the point of dissociation” (Spiegel, 1972, p. 27). Many have overlooked that Herb was making a key distinction between trance “capacity” and the “ability” to concentrate. “Capacity” relates to the underlying biological structure being genetically present. “Ability” to concentrate relates to being able to tap into the underlying biological capacity. For example, Spiegel speculated that certain types of mental illnesses such as thought disorders or the manic phase of bipolar disorder would interfere with a person’s ability to tap into their underlying biological capacity. Another example would be persons suffering from organic brain damage. These neurological injuries might damage a person’s genetic biological wiring and render the individual unable to utilize it to full capacity or unable to use it at all. Thus, the ERS was hypothesized to be a sign or index of a person’s capacity to experience trance by a shift in their ability to concentrate on their generalized peripheral awareness (also called a person’s generalized reality orientation by Ronald Shor (Shor, 1959)) to a state of highly focalized attention. In contrast, the IND score was a measure (like other existing measures of hypnotizability such as the Stanford Scales (Weitzenhoffer & Hilgard, 1959; 1962) of a person’s ability to enter a hypnotic trance.

Regrets and Clarifications

Herb later regretted the title of his 1972 paper because of the phrase “An Eye-Roll Test for Hypnotizability.” The Eye Roll was described as a physiological “sign” indicated by “a pattern of neurophysiological response to signals for eye movements” (Spiegel, 1972, p. 25). In contrast, the IND summary score was based on a behavioral and psychological sample of responses which came from the historical “domain of hypnosis” (Hilgard, 1973). The ERS was hypothesized to be a sign or indicator of an underlying genetic capacity for trance while the IND was constructed as a behavioral/psychological measure of a person’s ability to experience hypnosis.

In the 1972 paper, Herb firmly indicated that the Eye Roll predicts hypnotizability. It does not directly measure it. Hence, the correlation between Eye Roll scores and measured hypnotizability (as indicated by IND scores) was not significant in 25-30% of the patient sample. Others mistakenly considered the ERS
to be a direct measure of hypnotizability instead of the entire HIP (which includes both the ERS and the IND). This is why Herb developed the categorical Profile Grade system for characterizing a person’s summary performance on the entire HIP. Herb’s conceptualization of different quantitative and qualitative aspects of measured hypnotizability distinguished his theoretical model from other models of hypnosis, e.g., psychoanalytic (Fromm, 1976), neo-dissociation (Hilgard, 1974), socio-cognitive (Barber, 1969) or role-taking (Orne, 1959; 1966; Sarbin & Coe, 1972) which were forwarded at that time.

**HIP Manual Development**

From 1971-1973, another sample of a consecutive patient series was administered the HIP and the data were subjected to much more complex psychometric analysis. A new administration and scoring manual for the HIP and a new scoring sheet was published in 1973 (Spiegel, 1973) with a follow up publication of a similar administration and scoring manual in 1974 (Spiegel, 1974). These new manuals now opened as a book so that the administration and scoring procedure was on the left side and the scoring sheet was on the right side. The administration and scoring procedure had spiral binding on the top so that each of the HIP item sections could be easily read and then flipped over to proceed with the instructions for administration and scoring of the next item.

**Hypnotizability and Psychopathology**

**The Bellevue Study**

An initial study was carried out in the psychiatric division of the Bellevue Hospital/NYU Medical Center in the late 1960’s and early 1970’s. The study hypothesized that patients with a Soft or Decrement Profile (i.e. Non-Intact Profile Grades) would evidence more severe psychopathology compared to patients with a Profile Grade of Zero, Intact or Increment. One hundred inpatients were selected by hospital staff who were unaware of the study hypothesis for participation. All were administered the Hypnotic Induction Profile by a rater who was unaware of the patient’s chart diagnosis but did know that the subjects were psychiatric inpatients. Of the 100 patients studied, 95 earned Decrement profiles. Among the 95 patients who earned a Decrement profile, two thirds had a diagnosis of schizophrenic disorder while the remaining one third had a diagnosis of either a psychopathic personality disorder or psychotic affective disorder. A similar finding emerged when comparing the IND scores of patients who were diagnosed as suffering from a schizophrenic disorder, bipolar disorder or psychotic recurrent depression. The IND scores of each of these patients groups were all significantly lower ($p < .0001$) than a normal comparison group or a psychiatric outpatient group.

Collectively, the findings confirm the study hypothesis that patients earning Non-Intact HIP Profile Grades or low IND scores were also independently diagnosed as suffering from severe psychopathology. Unfortunately, the study may be criticized because the HIP examiners were aware that the subjects were all psychiatric...
inpatients and were probably hospitalized because of their severe psychiatric impairment. This prompted a new study where inpatient status was not a potential bias on how the raters scored the HIP.

The 105 Study

The 105 study, which was also carried out in the late 1960’s and early 1970’s, was comprised of a consecutive outpatient series. The sample (n = 110) initially presented for treatment by Herbert Spiegel and were then referred for an independent psychiatric evaluation by an examiner who was unaware of the study’s hypothesis. Five patients did not have complete data available and were dropped from the statistical analysis, leaving 105 patients in the final sample. Herb administered the HIP during the initial diagnostic consultation. Based on the subsequent psychological evaluation report, a psychiatrist who was unaware of the study hypothesis, unfamiliar with the patients and unaware of the patient’s HIP Profile Grades, rated each patient on a five point mental health/illness continuum. A rating of 1 indicated mental health and no presence of psychoneurosis (the DSM II diagnostic label used at that time). A rating of 2 indicated moderate neuroses and a rating of 3 indicated the presence of severe psychoneuroses. Finally, a rating of 4 indicated probable psychosis and a rating of 5 indicated obvious psychosis.

Both the Profile Grade scoring system (the categorical configuration score based on the interaction between the ERS and IND) and the IND score were used in the statistical analysis of the 105 study data. For the IND score, patients who demonstrated relative mental health (i.e., no neurosis) earned a mean IND score of 8.7 (n=10). Patients who showed moderate neurosis (n=46) earned an IND score of 7.7. In contrast, patients who were classified on the mental health/illness continuum as having a severe neurosis (n=20) earned a mean IND score of 5.5 and those classified as probable psychosis earned a mean IND score of 5.8. Finally, one outpatient classified as obviously psychotic earned a mean IND score of 3.0. The results indicate a significant (p < .0001), negative linear relationship between the degree of mental health impairment and IND scores. This is consistent with the study hypothesis. In other words, patients with relative mental health earned significantly higher IND scores than those classified as demonstrating probable psychosis, severe neurosis and obvious psychosis.

The sample was first split into two groups with one group comprised of mild to moderate psychopathology (n=46) and the other group comprised of severe psychopathology (n=49). In the mild to moderate group, 49 (71%) earned Intact HIP Profiles. In contrast, among the group classified as having severe psychopathology, 29 (81%) earned Non-Intact HIP Profiles.

Collectively, the results indicate similar findings for distinguishing mental health/illness using either the HIP Profile Score or the IND score. However, “when the predictions of the scores disagree, the Profile score is more accurate” (Spiegel & Spiegel, 1978, p. 159). In other words, the Profile score (i.e. an interaction between the ERD and the IND scores) is more accurate at detecting severe psychopathology than the IND score alone.
A Historical Context for Understanding “An Eye Roll Test for Hypnotizability”

The Zero Study

One final study, also done in the early 1970’s (but not reported until the publication of *Trance and Treatment*: Spiegel & Spiegel, 1978) was undertaken to look at the degree of psychopathology among patients who earned a Zero Profile (i.e., were not found to be clinically hypnotizable because they did not have the underlying biological capacity to experience trance). Eight patients who earned Zero Profiles and also had an independent psychological evaluation were also independently classified on the same mental health/illness continuum scale used in the 105 study. Two (25%) of these patients were classified by the independent rater as having severe psychopathology while six (80%) were classified as having no psychopathology or mild to moderate psychopathology. Compared to the group that earned Non-Intact Profiles the difference was highly significant (Fisher exact probability = .005). This finding confirmed the prediction “that a zero score on the control differential and/or arm levitation predicts severe psychopathology only in the presence of a positive eye roll” sign (italics in the original source: Spiegel & Spiegel, 1978, p. 160). Spiegel and Spiegel 1978 interpreted this data as suggestive “that the ER (Eye Roll) and the Profile Score have particular value in the identification of patients with severe psychopathology” (Spiegel & Spiegel, 1978, p. 160).

The Grade 5 Syndrome Paper

Herb was always interested in patients who earned ER scores of four and wondered why some appeared to be even more hypnotizable than others. Based on his earlier work on hypnotic age regression (Spiegel, Fishman & Shor, 1945), Herb had identified subjects who appeared to experience “regression in the present tense.” That is, these subjects, when regressed to an earlier biological age demonstrated developmental response patterns consistent with someone at that age. Other subjects, although highly hypnotizable, experienced hypnotic age regression in a dualistic manner. That is, while they behaved similar to someone at a younger biological age, they always maintained an awareness of their true biological age. It was also subjectively reported that while they felt younger (i.e., experienced a retrospective memory of how they responded at that age), they felt as though they were subjectively observing themselves at that age in contrast to actually re-experiencing that age.

In 1974, Herb published “The Grade 5 Syndrome: the highly hypnotizable person” (Spiegel, 1974). In this paper, Herb noted that some people who display an ERS of four are more hypnotizable with additional post-HIP testing. In *Trance and Treatment* (Spiegel & Spiegel, 1978), Herb specifies that this additional testing includes 3 components: 1) ability to sustain posthypnotic sensory and motor alterations including positive hallucinations, negative hallucinations and motor paralysis; 2) total spontaneous amnesia to the entire hypnotic experience without being signaled to have amnesia; and 3) ability to regress to earlier age levels and experience age in the present tense. Only “if all three tests reveal positive response, this identifies a Grade 5” (Spiegel & Spiegel, 1978, p. 78). Therefore, all Grade 4’s are potential Grade 5’s. *It is only with this additional post-HIP testing that one can confirm if the subject is an actual Grade 5.*

In addition to high hypnotizability and a 4 ERS, Herb observed that persons who are classified as Grade 5’s also evidence the following configuration of personality traits and characteristics: 1) an intense beguilingly innocent expectation of support from others in a somewhat atavistic, prelinguistic mode; 2) a willingness to replace old premises and beliefs with new ones without critical scrutiny; 3) an ability to affiliate with new events with an almost magnetic attraction to them; 4) a relatively telescoped time sense focused almost
exclusively on the present; 5) an almost naïve lack of awareness of logical incongruities; 6) possession of an excellent memory; 7) an intense capacity for concentrating and for dissociating while doing so; 8) underneath this malleable overlay of traits is a narrow, hard, fixed core that is subject to neither negotiation or change; 9) role confusion due to the paradoxical relationship between the hard core dynamism and chameleon-like malleability; 10) an exquisite responsivity to external cues with a painfully slow return to applying their own principles and beliefs when adjusting to new situations (Spiegel, 1974; Spiegel & Spiegel, 1978).

Herb also identified that Grade 5’s are particularly responsive to specific types of treatment strategies and usually display specific types of psychiatric symptoms (e.g., hysterical conversions, hysterical paralyses, dissociative episodes) when under stress. The key relevance of these observations to the ERS is that these types of hypnotic responsiveness and personality traits are not observed in persons with an ERS < 4.0 or in subjects who earn an Increment Profile (i.e., ERS < 3.5 and IND > 8.0).

First Published Psychometric Analyses of the HIP
In 1976, Herb and his colleagues (Spiegel, Aronson, Fleiss & Haber, 1976) published their first psychometric account of the statistical analyses done during the standardization of the HIP. Normative data are reported for both the ERS and IND. Reliability and validity data are also presented.

Review of the HIP and its Development
In 1977, Herb (Spiegel, 1977) published his initial account of the creation and development of the HIP. While this includes a discussion of both the ERS and IND, the present discussion is more focused on providing a historical context for understanding the discovery of the relation between the ERS and innate trance capacity and the almost parallel creation and development of the HIP.

Publication of Trance and Treatment
In 1978, Herb and his son, David Spiegel, M.D. published Trance and Treatment which served as the first compendium of published and unpublished data regarding the ERS and HIP. One previously unpublished fact is relevant to the current discussion of the HIP. It concerns the correlation between the ERS and IND scores in an unselected patient sample compared to a sample screened for the absence of severe psychopathology. It was noted that in the Psychometric Analysis of the HIP paper, a correlation of .22 (p < .01-due to the large sample (n=1,023) between scores on the ERS and IND was observed. Next, a comparison was made between this correlation and the correlation between the ERS and IND scores in the 105 study (Spiegel, Fleiss, Bridger, & Aronson, 1975) for patients in the mild to moderate psychopathology category as determined by their ratings on the mental health/illness continuum scale. In this sample, which was screened for the absence of severe psychopathology, the correlation between the ERS and IND scores were r (54) = .52, p < .001. This correlation of .52 in the sample screened for the absence of severe psychopathology (n=49) was significantly higher (z = 3.00, p < .002, one tailed significance test) than the severe psychopathology sample of patients (r (47) = .15, ns). These data indicate that the correlation between ERS and IND scores is obscured by the presence of severe psychopathology. Other factors (e.g., psychoactive medications) may also further obscure this correlation but have not been subject to empirical verification.

The 1978 edition of Trance and Treatment also contains other data relevant for health care practitioners who utilize hypnosis in their clinical practice but that data is not relevant to the current account.
Summary

This paper provides a historical context for understanding the discovery of the Eye Roll Sign (ERS) and its relation to a person's innate trance capacity and the parallel development of the Hypnotic Induction Profile (HIP) from 1965 through the publication of *Trance and Treatment* (Spiegel & Spiegel, 1978). Another paper is in preparation which will summarize clinical and experimental research which was carried out after 1978 to empirically validate the construct validity of the ERS and HIP (Frischholz & Nichols, in preparation). In 1986, William E. Edmonston, Jr., former Editor of the *American Journal of Clinical Hypnosis*, published *The Induction of Hypnosis* (Edmonston, 1986). On page 386, Edmonston predicts that the eyes are “the only naturally visible parts of the central nervous system (Edmonston, 1986, p. 386) and they “will prove to be the keys to understanding hypnosis and hypnotizability (Kihlstrom & Frischholz, in press). If this prediction should prove to be true, then it is one additional indication that Herbert Spiegel was a man ahead of his time.

References


Frischholz, Nichols


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