

Interpersonal Perception in Internet Chat Rooms

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Accurate personality judgments are important for successful interpersonal interactions. Because millions of people use the Internet everyday to create and maintain interpersonal relationships, the current study investigated interpersonal perception in Internet chat rooms. Participants were 156 undergraduate students who interacted in chat rooms for 15 min either one-on-one or in groups of six. Using the Social Relations Model (Kenny, 1994), it was found that in one-on-one interactions, judges were able to achieve consensus for the targets' traits of extraversion, agreeableness, and openness. For extraversion and openness, this agreement corresponded with targets' self-perceptions. Unlike research using face-to-face interactions, consensus was highest and assimilation was lowest when participants interacted one-on-one. Judges in group interactions tended to like the targets less and viewed them less favorably across all personality traits than did judges in one-on-one interactions. Targets' self-reported personality had little predictive power in determining who was liked in Internet chat rooms. However, targets' prior chat room experience was consistently found to be a moderate predictor of likability. © 2002 Elsevier Science (USA)

Interpersonal perception is crucial to our ability to complete daily social activities. We must be able to perceive something about the people we interact with in order to know whether we should respond to them, trust them, or even befriend them. For this reason, many researchers during the past several decades have focused on determining the reliability and accuracy with which people perceive others' personalities during face-to-face interactions (Funder, 1999; Kenny, 1994). While the majority of this research has demonstrated that people tend to be reliable and accurate judges of personality, it is unclear whether less direct forms of communication (e.g., Internet chat rooms) render enough information for individuals to make reliable judgments.

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It is estimated that, in the United States, more than 100 million people have access to the Internet in their homes; this is 38% of the population (Nielsen Media Research, 1999). Many Internet users employ this medium to conduct business, keep in touch with family and friends, seek emotional support, and/or search for romantic partners. One of the more frequent online activities of Internet users is the use of chat rooms. Chat rooms are relatively new forms of text-based communication that allow individuals to interact with each other over the Internet. This type of communication has been likened to other forms of communication, such as casual face-to-face interactions and telephone conversations, because it allows the exchange of short, synchronous messages in real time (Walther, 1997). Although chat room communications are similar to casual interactions, they are devoid of certain types of information, including physical appearances and nonverbal cues. While the public has embraced this new technology, no known studies have examined personality perception within this medium.

During face-to-face interactions, judges tend to obtain moderate agreement with each other in their impressions of a common target's personality (Funder & Colvin, 1988; Funder, Kolar, & Blackman, 1995; Kenny, Albright, Malloy, & Kashy, 1994). Funder and Colvin (1988) found that even after a relatively short period of time (5 min), judges are generally able to achieve moderate consensus across various personality traits. If chat rooms allow individuals to express their personalities using only text-based information, then multiple judges in this environment should be able to reach consensus in their impression of a given target. For example, if conscientiousness can be expressed with text that is devoid of nonverbal cues, then different judges in chat rooms should be able to agree with each other in their assessment of a target's conscientiousness.

Studies using face-to-face interactions indicate that the type of trait being evaluated can moderate the degree of agreement between judges. In general, traits that are more visible tend to yield higher levels of consensus (Funder & Drobth, 1987). Within the Five-Factor Model of personality (FFM: extraversion, agreeableness, conscientiousness, neuroticism, and openness), the highly visible trait of extraversion is consistently found to have the greatest amount of consensus (Kenny et al., 1994). This may occur because extraversion is associated with specific and observable behaviors (Funder & Drobth, 1987). However, when people are not directly visible, such as when interactions occur in chat rooms, it is unknown whether this trend will persist. Thus, in chat rooms, extraversion might not be easier to judge than other traits that are traditionally "less visible."

In a meta-analysis of face-to-face interactions, it was demonstrated that consensus among judges varies depending on whether people interact one-on-one or in groups (Kenny et al., 1994). In general, consensus tends to be higher when individuals interact in groups than when they interact one-on-

one. This increase in consensus during group interactions may occur because all judges are able to observe the same behaviors exhibited by a given target. However, group interactions in Internet chat rooms are sometimes chaotic because many individuals type messages simultaneously. This causes the text of the conversation to scroll by quickly, making it difficult to identify which person is talking or to recall what a specific individual said. Unlike face-to-face interactions, this may make consensus in chat rooms more difficult to achieve during group interactions than in one-on-one interactions.

It is possible that because chat rooms provide no physical cues, a judge will see all targets in essentially the same way. This phenomenon, termed *assimilation*, is a reflection of how a judge views a particular group (Kenny, 1994). Assimilation is at its highest when a single judge rates each target exactly the same, but judges differ from each other in their ratings. In face-to-face interactions, assimilation tends to decrease if more information about the target is made available to the judge (Kenny, 1994). This occurs because the more information a judge receives about a target, the more uniquely the judge perceives that person's personality. If group interactions in chat rooms are more chaotic than one-on-one interactions, then judges might not be able to process as much information about a given target. Thus, in chat rooms, consensus may be greater during one-on-one interactions, with assimilation being higher during group interactions.

Because of the anonymity in a chat room environment, it has been suggested that people using the Internet are less concerned about social sanctions than are people in face-to-face interactions (McKenna & Bargh, 2000). Therefore, people communicating via chat rooms may put forth less effort to control what they say and, as a result, will act in accordance with how they view themselves. This would allow for agreement between how individuals see themselves and how judges perceive their personalities in chat rooms. For example, people who believe that they are antagonistic might behave in a cynical and uncooperative manner in chat rooms and thus be perceived as antagonistic by others.

Conversely, the anonymity afforded by chat room environments may also encourage individuals to behave counter to the way they typically act. A shy person may behave in a more outgoing manner in a chat room than in a face-to-face interaction. Therefore, people who see themselves as introverted may appear extraverted to others in a chat room. In face-to-face interactions, people tend to rate themselves as more extraverted, agreeable, conscientious, neurotic, and open than judges rate them (Kenny, 1994). Due to the anonymity in chat rooms, this trend for extraversion may become reversed, with people in chat rooms appearing more extraverted than they typically view themselves.

When individuals use a chat room to begin or maintain a personal relationship, how much they like the person they communicate with is perhaps the

most salient characteristic of the interaction. While the likability of a target tends to be largely idiosyncratic (Malloy & Albright, 1990; Park & Flink, 1989; Wright, Ingraham, & Blackmer, 1985), there are some general trends in who is popular. By their very nature, personality traits are highly evaluative (Hampson, Goldberg, & John, 1987), and as bipolar constructs, one pole of a trait is typically seen as very desirable while the other is often seen as undesirable. Individuals who are extraverted, agreeable, conscientious, stable, and open tend to be liked more than do individuals who do not possess such characteristics (Cartwright, 1997; Park & Flink, 1989). In addition, in face-to-face interactions, physically attractive individuals tend to be liked better than do less attractive individuals (Cash, Begley, McCown, & Weise, 1975; Light, Hollander, & Kayra-Stuart, 1981). Although in chat rooms a judge has no access to physical cues, it is possible that the way targets present themselves may be related to how much they are liked. Such presentations may take form in the use of emoticons,¹ speed of response, or sentence structure. It is possible that people who have experience in using chat rooms and understand chat room etiquette will present a more likable image to judges.

By incorporating the results and methods traditionally used by social and personality researchers, a better understanding of interactions in Internet chat rooms can be achieved (Markey, 2000). To accomplish this, the Social Relations Model (SRM) (Kenny, 1994) is used to explore personality perception in Internet chat rooms by examining (a) the degree of consensus and assimilation for traits within the FFM during one-on-one and group interactions, (b) the agreement and differences between how targets see themselves and how judges perceive them, and (c) whether individuals' personality and chat room experience can predict how much they are liked by judges.

Overview of the Social Relations Model

The Social Relations Model provides researchers with a methodological and statistical tool for analyzing data dealing with interpersonal perceptions. This model employs multiple judges and targets in order to decompose each interpersonal judgment into three basic components: judge effect, target effect, and relationship effect. These components allow the investigation of assimilation, consensus, and self–other agreement as well as the relations among personality, chat room experience, and likability.

The *judge effect* refers to the variation in the means of multiple judges' ratings across targets. The magnitude of the judge variance indicates the consistency of a judge's ratings across different targets. If there is considerable judge variance, then assimilation has occurred. If each judge gave ex-

¹ Emoticons are a group of keyboard characters (e.g., :-), :), :() typically representing facial expressions or emotions or otherwise conveying tone or attitude. These figures are frequently used in Internet chat rooms.

actly the same rating to all interaction partners and judges differed from each other on these ratings, then there would be perfect assimilation. A high judge effect indicates that judges tend to form general impressions of the targets' personalities that are fairly consistent across all of the targets with whom they interacted. In a block design, an individual's judge effect can be calculated by subtracting the mean rating for that judge from the overall mean across judges (Kenny, 1994).

The *target effect* refers to how an individual tends to be viewed across judges. Thus, the magnitude of the target variance indicates the consistency of different judges' ratings of a single target. If the target variance is high, then consensus has occurred. If each target received exactly the same rating from all of the judges and targets differed from each other on these ratings, then there would be perfect consensus. For example, a high target effect for extraversion would indicate that the judges consistently see some targets as extraverted, whereas other targets are consistently seen as introverted. As with the judge effect, in a block design, an individual's target effect can be calculated by subtracting the mean rating for that target from the overall mean across targets (Kenny, 1994).

The *relationship effect* measures how a judge uniquely rates a target. This is calculated by removing the individual-level effects of both judges and targets. In other words, the relationship effect represents the extent to which a perceiver's rating of a target cannot be explained by the judge effect or the target effect. The current study does not focus on the relationship effect and instead focuses on assimilation and consensus. It should be noted that any interpretation of the relationship effect in this study needs to be done with caution because it is confounded with error variance.

METHOD

Participants

Data were collected using two different conditions. The first condition used one-on-one interactions, and the second condition used group interactions. In Condition 1, participants were 84 male and female undergraduate students (60 females, 71%). This sample reported their ethnicities, with 29 classifying themselves as Asian American (35%), 23 as Latino (27%), 17 as Euro-American (20%), 5 as African American (6%), and 10 as "other" (12%). In Condition 2, participants were 72 undergraduate students (52 females, 72%). This sample also reported their ethnicities, with 26 classifying themselves as Asian American (36%), 16 as Latino (22%), 12 as Euro-American (17%), 9 as African American (12%), and 9 as "other" (12%).

Procedure

Participants in Condition 1 were run in 14 groups of 6. To ensure that participants would not see their interaction partners, half of the participants reported to one room (Room A) and the other half to a different room (Room B). Participants were first given an overview of how to use chat rooms and then were placed into private computer booths. Each booth had a curtain so that the experimenter and the other participants in the room could not see each other. Booths

were equipped with a Pentium-class computer running the communication program mIRC. This program is an Internet Relay Chat (IRC) program that allows users to talk to each other in real time. IRC is a multi-user chat system, where people meet in "channels" (i.e., chat rooms) to talk privately or in groups (mIRC, 2000).

While in the separate booths, participants first completed the Big Five Inventory (John, Donahue, & Kentle, 1991), a set of 44 Likert-type items used to assess the traits of extraversion, agreeableness, conscientiousness, neuroticism, and openness. Following this, participants were asked to indicate the extent to which they agreed with the statement "I often use Internet chat rooms." Responses were rated on a scale of 1 to 5, with 1 indicating *disagree strongly* and 5 indicating *agree strongly*.

Next, participants were told that they were going to interact one-on-one with a total of 3 other participants. They were instructed that they could discuss anything they would like but were asked not to reveal their names; rather, each participant was assigned a color to use as his or her name during the interaction. To ensure the privacy of each participant and to make the interactions similar to real chat room experiences, participants were told that they would not be meeting or seeing any of their interaction partners at the conclusion of the experiment.

During Condition 1, all communications occurred in private dyads, with each participant in Room A interacting with each participant in Room B for 15 min in a block design (Kenny, 1994). Therefore, each participant served as a judge and a target during three different interactions. After each interaction, participants were instructed to rate the partners with whom they had just interacted using the Big Five Inventory. Written instructions indicated that they were to rate the extent to which each characteristic may or may not apply to their interaction partners. All questionnaires were completed anonymously in the computer booths, and participants were assured that their interaction partners would not see any of their responses.

On completion of all three interactions, participants were asked to indicate, on a 5-point Likert scale, how much they liked each person with whom they had interacted. To ensure that interaction partners did not have prior acquaintance before the experiment, they were also asked whether they knew any of their interaction partners. No participants indicated that they knew their interaction partners prior to the experiment.

Participants in Condition 2 were run in 12 groups of 6. Procedures were identical to those in Condition 1, with half of the participants reporting to Room A and the other half reporting to Room B, except rather than interacting with each partner one-on-one, all 6 participants interacted in a single chat room for 15 min. On completion of the group interaction, the 3 participants in Room A were instructed to rate the 3 participants in Room B, using the Big Five Inventory (John et al., 1991), and vice versa. As in the one-on-one condition, this allowed data to be collected in a block design (Kenny, 1994), with each participant serving as a target and judge three times. Next, participants in the group condition indicated, on a 5-point Likert scale, how much they liked each interaction partner and whether they had known each interaction partner prior to the experiment. No participants in the group condition indicated that they knew their interaction partners prior to the experiment.

RESULTS

Consensus and assimilation were examined using the SRM. The SRM partitions the variance of a judge's rating into three components: judge, target, and relationship. Table 1 displays the relative partitioning (the percentage of variance accounted for by each component relative to the other components) for the FFM and for likability, as assessed in both one-on-one and group interactions. Significance tests for the variances were computed by estimating the variance components of each group. The means of these esti-

TABLE 1
Relative Proportions of Explained Variance in
One-on-One and Group Interactions

Factor	Judge	Target	Relationship
One-on-one ^a			
Extraversion	.00	.23*	.77
Agreeableness	.18*	.18*	.64
Conscientiousness	.26*	.01	.73
Neuroticism	.14	.04	.82
Openness	.29*	.16*	.55
Likability	.00	.13	.87
Group ^b			
Extraversion	.14	.11	.75
Agreeableness	.46*	.00	.54
Conscientiousness	.21	.13	.66
Neuroticism	.30*	.00	.70
Openness	.38*	.00	.62
Likability	.29*	.12	.60

^a $df = 13$.

^b $df = 11$.

* $p < .05$.

mates were then tested to see whether they were greater than zero (Kenny, 1994). In one-on-one interactions, the significant judge variance reveals that assimilation occurred for openness, conscientiousness, and agreeableness (29%, 26%, and 18%, respectively). In the group interactions, there was significant judge variance for agreeableness, openness, and neuroticism (46%, 38%, and 30%, respectively). Across the five factors, the average level of assimilation was nearly twice as high in the group interactions (30.0%) than in the one-on-one interactions (17.4%).

In one-on-one interactions, significant target variance revealed consensus on extraversion, agreeableness, and openness (23%, 18%, and 16%, respectively). None of the traits produced significant consensus in the group interactions. Across the five factors, the average level of consensus was higher in the one-on-one interactions (12.5%) than in the group interactions (5.0%). Computers recorded the number of text lines sent by each target during each interaction to examine whether these results occurred because targets in the one-on-one condition might have provided judges with more information than did targets in the group condition. An independent t test, computed at the group level (Kenny, 1994), found no significant difference in the number of text lines sent by a target during one-on-one ($M = 44.23$, $SD = 14.83$) and group interactions ($M = 39.73$, $SD = 9.33$), $t(24) = -.91$, $p = .38$.

Next, whether participants in one-on-one interactions were perceived dif-

TABLE 2
Independent *t*-Tests for Differences in Perceptions of Participants in One-on-One
and Group Interactions

Factor	Condition				<i>t</i>
	One-on-one		Group		
	Mean	<i>SD</i>	Mean	<i>SD</i>	
Extraversion	3.70	0.16	3.25	0.12	8.03*
Agreeableness	3.62	0.25	3.06	0.11	7.10*
Conscientiousness	3.35	0.17	3.07	0.10	5.05*
Neuroticism	2.60	0.13	2.98	0.14	2.19*
Openness	3.33	0.16	3.20	0.14	2.19*
Likability	4.03	0.34	3.48	0.34	4.10*

Note. All measures of traits and likability are on a 5-point scale. *df* = 24.

* $p < .05$.

ferently from participants in group interactions was examined. Table 2 presents the mean ratings across judges and targets for each interaction condition on the FFM and likability. Independent *t* tests were computed at the group level and indicated that participants in one-on-one interactions were seen as significantly more extraverted, agreeable, conscientious, stable, open, and likable than participants in group interactions.²

The relative agreement between how individuals saw themselves and how judges perceived their personalities in chat rooms was also examined. Correlations between self-ratings and the target effects were calculated separately for one-on-one and group interactions. These correlations have been disattenuated to take into account the reliability of the target effect. Such disattenuation removes the artificial lowering of the correlations that results from having a limited number of interaction partners (Kenny, 1994). Significance testing was based on the attenuated correlations, with the degrees of freedom equal to the number of persons minus the number of groups minus 1. Because all relations were predicted to be positive, significance was examined using a one-tailed test. In addition, because agreement between judges is a necessary condition for self–other agreement, the correlation was not computed unless the target effect accounted for at least 10% of the variance in judge perceptions (Kenny, 1994). As shown in Table 3, self–other agreement was significant for extraversion ($r = .32$) and openness ($r = .46$) in one-on-one interactions. There was no significant self–other agreement found in the group interactions.

² While judges perceived participants in one-on-one and group conditions differently, there were no significant mean differences in self-perceptions between participants in one-on-one and group conditions.

TABLE 3
Self-Other Agreement

Factor	Condition	
	One-on-one ^a	Group ^b
Extraversion	.32* (.23)	.20 (.11)
Agreeableness	-.13 (-.08)	##
Conscientiousness	##	.07 (.04)
Neuroticism	##	##
Openness	.46* (.31)	##

Note. These correlations have been disattenuated to take into account the reliability of the target effect. Uncorrected correlations are in parentheses. ##, insufficient variance to compute correlation.

^a $df = 55$.

^b $df = 47$.

* $p < .05$ (one-tailed test).

Next, the mean differences between how participants viewed themselves and how judges perceived their personalities in chat rooms was investigated. Table 4 presents the mean differences between self-ratings and judge ratings on the FFM. Independent t tests were computed at the group level and indicated that, in one-on-one interactions, individuals saw themselves as signifi-

TABLE 4
Mean Differences between Self-Ratings
and Judge-Ratings

Factor	Condition	
	One-on-one ^a	Group ^b
Extraversion	-.42* [.07]	-.05 [.08]
Agreeableness	.27* [.07]	.60* [.04]
Conscientiousness	.30* [.06]	.43* [.06]
Neuroticism	.37* [.09]	-.01 [.10]
Openness	.29* [.09]	.37* [.15]

Note. Values given reflect differences on a 5-point scale. Positive entries indicate that self-ratings were higher than judge-ratings; negative numbers indicate that judge-ratings were higher than self-ratings. Standard errors of the differences are in brackets.

^a $df = 13$.

^b $df = 11$.

* $p < .05$.

TABLE 5
Correlations between Self-Ratings and the
Target Effect of Likability

Factor	Condition	
	One-on-one ^a	Group ^b
Extraversion	-.03 (-.02)	.14 (.02)
Agreeableness	-.22 (-.12)	-.30 (-.18)
Conscientiousness	.44* (.26)	.02 (.01)
Neuroticism	.05 (.02)	.03 (.02)
Openness	.26 (.15)	.23 (.14)
Chat room experience	.46* (.27)	.64* (.39)

Note. These correlations have been disattenuated to take into account the reliability of the target effect. Uncorrected correlations are in parentheses.

^a $df = 55$.

^b $df = 47$.

* $p < .05$ (one-tailed test).

cantly more introverted, $t(13) = -5.76$, $p < .01$, agreeable, $t(13) = 3.49$, $p < .01$, conscientious, $t(13) = 5.00$, $p < .01$, neurotic, $t(14) = 3.83$, $p < .01$, and open, $t(14) = 3.26$, $p < .01$, than others saw them. In group interactions, the findings were similar; individuals saw themselves as significantly more agreeable. $t(11) = 13.69$, $p < .01$, conscientious, $t(11) = 3.44$, $p < .01$, and open, $t(11) = 2.42$, $p < .05$.

Finally, the relationship between an individual's self-ratings on the FFM and how much he or she was generally liked in chat rooms was examined. Table 5 presents the correlations between the self-ratings on the FFM and chat room experience with the target effect of liking. The only self-rated personality trait that significantly predicted how well a person was liked was conscientiousness ($r = .44$) in one-on-one interactions. However, in both one-on-one and group interactions, a person's likability was significantly predicted by his or her overall chat room experience ($r = .46$ and $r = .64$, respectively).

DISCUSSION

Reliable interpersonal perceptions are crucial in many areas of our lives. To know how to respond to others, it is necessary for us to make personality

judgments about friends, employees, family members, romantic partners, and even strangers. With the increasing use of Internet chat rooms for various social and business activities, it is important to determine the reliability of such judgments in this new medium.

By applying the methods and analyses of the SRM (Kenny, 1994), it was found that in chat rooms judge consensus was higher and assimilation was lower in one-on-one interactions than in group interactions. That is, judges were more likely to agree with each other about an individual's personality in one-on-one interactions than in group interactions. Conversely, in group interactions, judges tended to see little difference among the personalities of their interaction partners. Because the average amount of information provided by each target was essentially identical in these two interactions, it appears that judges in group interactions were simply unable to effectively use the provided information. This failure is likely a result of the chaotic nature of group chat rooms, where people tend to type messages simultaneously. This chaotic nature may also explain why individuals in group interactions tended to be liked less and were seen less favorably across all personality dimensions than were individuals in one-on-one interactions.

In one-on-one interactions, it was found that extraversion had the highest level of consensus. In face-to-face interactions, this finding is generally attributed to the visible nature of behaviors associated with this trait. For example, extraverts tend to speak in loud voices, exhibit social skills, dominate conversations, exhibit high enthusiasm, and be physically animated (Funder & Sneed, 1993). While some of these behaviors are impossible to exhibit in chat rooms, it appears that cues associated with this trait are easier to convey through text-based interactions than are cues related to other traits within the FFM.

In one-on-one interactions, there was moderate self-other agreement on the traits of extraversion and openness. This implies that even in chat rooms, people continue to act in accordance with how they view themselves on these traits. Unlike research using face-to-face interactions, which finds that extraversion has the greatest degree of self-other agreement (Funder, 1999; Kenny, 1994), in chat rooms openness had the highest level of self-other agreement. This was likely due to the unstructured environment of the chat rooms used in this experiment. During their interactions, participants discussed a variety of topics ranging from going to parties with friends to attending art galleries and museums. Judges were apparently able to efficiently use this information to make informed ratings of an individual's openness.

Consistent with findings using face-to-face interactions (Kenny, 1994), participants tended to judge themselves as more agreeable, conscientious, neurotic, and open than others judged them. Unlike face-to-face interactions, participants were seen as more extraverted by judges in one-on-one chat rooms than they saw themselves. Because there was also self-other agree-

ment for this trait, it appears that in chat rooms individuals who were highly introverted became moderate extraverts and people who were moderately extraverted became highly extraverted. Such a finding may be a result of the anonymity afforded by chat rooms, which may have allowed individuals to act less shy and more outgoing.

How individuals viewed their own personalities had little predictive power in determining how well they were liked by their interaction partners. However, prior chat room experience was consistently found to be a moderate predictor of how well people were liked. The more experience individuals had in using chat rooms, the more they tended to be liked by the judges. Such a relationship might have occurred because individuals with chat room experience were likely better versed in chat room etiquette and were therefore more capable of communicating and discussing various topics in a cohesive and accommodating manner.

The investigation of personality judgment in chat rooms is interesting for at least two reasons. First, it allows an investigation of personality judgment when observations are divorced from physical appearance and nonverbal behavior. Second, with millions of people using the Internet to make friends, find romantic partners, and conduct business, personality judgments are as important in chat rooms as they are in face-to-face interactions. This study presents an initial step in understanding such perceptions of personality. However, because this study simulated chat rooms, the generalizability of these results to chat rooms outside of the lab setting is unknown. It is possible that when people use chat rooms from home, their anonymity may be even greater. This may allow them to alter their personalities to such a degree that no consensus among judges would be achieved. Future studies can expand on these findings by examining such personality judgments in nonsimulated environments. In addition, how various personality traits manifest themselves in chat rooms could be investigated. For example, in chat rooms, do extraverts continue to exhibit social skills and dominate conversations? Instead of talking in a loud voice, is an extravert more likely to type in capital letters? The necessity of understanding personality perception and expression in chat rooms is becoming increasingly important as more people embrace the ease and efficiency provided by Internet communications.

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