ADAPTIVE ASPECTS OF SOCIAL COGNITIVE FUNCTIONING IN ADULTHOOD: AGE–RELATED GOAL AND KNOWLEDGE INFLUENCES

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The study of development from the lifespan perspective focuses on the adaptive aspects of human behavior. It is argued that a social cognitive perspective may be useful in examining and understanding adaptive aspects of behavior in everyday contexts across adulthood. Research conducted by Hess and colleagues has provided support for this assertion, demonstrating that age in adulthood is associated with increased selectivity in engagement of cognitive resources and the development of expert social knowledge. Both of these processes can be viewed as adaptive outcomes associated with changing circumstances and experience associated with age. Implications of this research for both the study of aging and of social cognition are discussed.

An important focus of social psychological research has been on examining processes associated with people’s understanding of social situations. These have been of particular interest to those taking a social cognitive perspective, where such processes have been examined in the context of research on, for example, attribution, person perception, impression formation, and attitude change. The importance of such research is based in the belief that understanding social reasoning and representational processes
will help explain why people act as they do in social situations. From a slightly different perspective, such processes are also of interest in that they are assumed to reflect adaptational processes. For example, the more accurate one is in interpreting social situations and behaviors, the better one should be able to react to the situation in a manner that facilitates achievement of personal or social goals.

The mainstream literature has focused on the development of theories that explain social judgment, detailing the processes involved as well as the factors that influence their operation (for examples, see Chaiken & Trope, 1999). Whereas these theories have been productive in terms of generating research, a concern could be raised regarding the fact that much of this work is based on data from younger adults (e.g., Blank, 1987; Blanchard–Fields & Hess, 1999; Sears, 1987). Given the assumed adaptive nature of social judgments, it can be reasonably argued that much could be gained by examining such processes within a developmental framework. Such an approach would not only permit one to test the generalizability of the theories, but also to examine how judgment processes change in concert with changing life circumstances. Examination of developmental effects might also result in the identification of important variables that should be considered within extant theoretical frameworks, but are neglected because they exhibit little variation or are unimportant within the typical college–aged samples.

Developmental research on social cognitive functioning has suggested that adulthood is not a period of stability (for reviews, see Hess & Blanchard–Fields, 1999; Staudinger & Pasupathi, 2000). There is also evidence that models of social judgments based on data from college students do not always translate in an unambiguous manner to the study of judgment processes across the rest of adulthood (e.g., Chen & Blanchard–Fields, 1997; Hess, Bolstad, Woodburn, & Auman, 1999). Existing research has suggested that social cognitive functioning tends to increase through midlife, with some additional evidence of stability or continued development through later adulthood. For example, effective reasoning about everyday problems within interpersonal contexts has been shown to increase with age and to be uncorrelated with basic cognitive skills (e.g., Cornelius & Caspi, 1987). Increasing
age is also associated with both the use of a greater variety of problem-solving strategies in such situations and greater sensitivity to the situation in selection of strategies (e.g., Blanchard–Fields, Jahnke, & Camp, 1995). In addition, the strategies used by middle-aged and older adults appear to reflect adaptive processes specific to their experience and life circumstances (Blanchard–Fields, Chen, & Norris, 1997).

Other research reveals a more complex picture of adult age differences in social inference processes. For example, inconsistent results have emerged from studies on theory of mind, with some investigations demonstrating that older adults are superior to younger adults in making appropriate inferences about the behavior of others based on complex levels of the actors’ mental states (Happé, Winner, & Brownell, 1998) and others finding just the opposite (Maylor, Moulson, Muncer, & Taylor, 2002; Sullivan & Ruffman, 2004). A similar pattern of inconsistency has emerged in research on attribution (e.g., Blanchard–Fields, 1994; Follett & Hess, 2002), with older adults exhibiting both high levels of interactive attributions—reflective of complex reasoning—as well as relatively strong dispositional inferences, suggestive of the fundamental attribution error. Importantly, age differences in social inferences have been shown to be unrelated to basic cognitive skills in some studies (e.g., Maylor et al., 2002; Sullivan & Ruffman, 2004), indicating that apparent declines may reflect other types of developmental processes. In support of this suggestion, there is some evidence that the tendency toward making the fundamental attribution error in later life may be based in older adults’ adaptive use of idiosyncratic schematic structures associated with unique life experiences (e.g., Blanchard–Fields, Chen, Schocke, & Hertzog, 1998) rather than in declining ability. These findings suggest that the operation of basic social cognitive mechanisms may be influenced by the interactions between individuals’ experiences, the contexts in which they function, and other age-related attributes. Insight into the operation of these mechanisms as well as their meaning (e.g., is an older adult’s exhibition of the fundamental attribution error a judgment bias or a reflection of past experience) would therefore be facilitated by examining them in relation to these factors.
AGING AND ADAPTATION

Our research has focused on social cognitive functioning as a means of examining the interface between cognition, knowledge, and motivation in characterizing age-related and individual variability in adaptive processes. As noted before, it is reasonable to assume that how one judges and represents information about other people will be related to one’s ability to negotiate the social world. Adaptive functioning within this context is assumed to involve several components, including (a) the acquisition of knowledge regarding the social domain, (b) rules and strategies for using such knowledge, (c) sensitivity to relevant cues in the environment in the application of this knowledge, and (d) selectivity in allocation of cognitive resources. Implicit in this approach, accuracy—which is arguably subjective anyway—is not so much the goal as is the ability to process information in a manner that will allow one to achieve one’s goals in particular social contexts. This view of social cognitive functioning in adulthood distinguishes itself from more traditional views of cognitive aging that emphasize performance in reference to universal standards (e.g., speed, number correct).

Our research has examined adaptive functioning from this perspective, with a specific focus on (a) the development of what we have termed social expertise and (b) age-related selectivity in resource allocation. Our approach and view of adaptive functioning is consistent with, and borrows from, ideas on social intelligence (e.g., Cantor & Kihlstrom, 1989), expert behavior (e.g., Anderson, 1983), and age-related selectivity (e.g., Baltes, 2003). In essence, we propose that cumulative social experience over one’s lifespan results in the acquisition of knowledge relevant to understanding social situations. This knowledge can take many forms, including the representation of information about social situations and activities themselves (e.g., scripts), groups and their members (e.g., stereotypes), and culturally shared views regarding the basis of social behavior (e.g., naïve personality theories). Research on adult age differences has shown that this knowledge reflects relevant information regarding the individual’s social context, and thus can be considered adaptive in that functioning within those contexts should be facilitated. For
example, Hess (1992) demonstrated that the content of young and older adults’ scripts of common activities (e.g., getting up in the morning, going to a restaurant) varied in a manner that meaningfully represented age-related differences in the importance of specific script components and the actions involved in those components. Similarly, research on stereotypes has revealed that views of later life become more complex, and stereotypes exhibit greater differentiation into subtypes as individuals get older (for review, see Hummert, 1999). This complexity mirrors the representations of young people held by both young and older adults, and appears to reflect age-related exposure to older adults and the roles and circumstances associated with old age.

From an expertise viewpoint, this information about the social world can be conceived of as declarative knowledge. Whereas such knowledge is essential for functioning effectively in a domain, true expert behavior comes about as individuals learn the appropriate situations for using this information and develop specific operations or strategies for its application. The development of procedural knowledge, as well as its refinement, may be another aspect of behavior that develops over the course of adulthood and distinguishes different-aged individuals. Such expertise may be seen as particularly adaptive in later life when cognitive resources necessary for more bottom-up processing are thought to decline (Hess, 1999). Note that such expertise may occasionally prove maladaptive when an older individual encounters a novel situation and cannot control the, perhaps, inappropriate application of procedural knowledge. For the most part, however, functioning should be facilitated in everyday contexts.

The accuracy and complexity of representational processes is only one measure of adaptation. Adaptive functioning is also associated with selective engagement of cognitive resources in a manner consistent with an individual’s processing goals. Within the mainstream social cognition literature, such goals are often conceptualized in terms of the nature of the social interaction and what the individual hopes to gain from it (e.g., Chen & Chaiken, 1999; Fiske, Lin, & Neuberg, 1999). From an adult developmental viewpoint, another layer of goals relating to selection and compensation in response to changing personal and life circum-
stances can be superimposed on these, thereby enriching our understanding of social cognitive functioning beyond that achieved by studying young adults.

STUDIES OF PERSON MEMORY

These ideas about adaptive functioning in adulthood grew out of our initial studies of social cognitive functioning, the results of which did not seem to be fully accounted for by models of aging or social cognition. A primary intent in these studies was in seeing if age differences in basic cognitive processes would have a systematic effect on performance. In particular, we wanted to see if normative declines in cognitive resources—conceptualized in terms of working memory functions—would affect older adults’ memory for behavioral information about another person. To do so, we focused on the phenomenon identified in younger adults that memory for behavioral information about a person is better if it is inconsistent with the perceiver’s impression of a person than if it is consistent. Models of social cognition and memory (e.g., Hastie, 1984; Wyer & Srull, 1989) proposed that this inconsistency effect reflected the greater elaboration accorded inconsistent information as individuals attempted to make sense of this information within the context of existing knowledge about the target.

Building on theories of cognitive aging (e.g., Craik, 1986), we wanted to see if reductions in the cognitive resources supporting elaborative processing would result in older adults being less likely than younger adults to exhibit this inconsistency effect. Some basis for this prediction could be found in our earlier work on memory for scripted activities, where the memorial advantage for atypical over typical script actions observed in younger adults was found to be significantly reduced in older adults (e.g., Hess, 1985).

The results of two initial studies of person memory were a bit mixed. Contrary to expectations, Hess, Vandermaas, Donley, and Snyder (1987) observed minimal age differences in the strength of the inconsistency effect for behavioral information that varied in consistency with a target person’s traditional gender role. Age
differences were also absent when a nontraditional gender role was ascribed to the target. In this case, we thought that older adults might experience interference in processing from traditional sex–role stereotypes given that aging is associated with increased difficulty in overcoming prepotent responses (e.g., West, 1996). However, both younger and older adults exhibited similar levels of interference.

A subsequent study (Hess & Tate, 1991) used a procedure similar to that of Hastie (1984). Younger and older adults were instructed to form an impression of a target based on a short list of behaviors. They were also told to provide a written continuation for each behavior in the list, making sure that the continuation in combination with the original description would form a grammatically correct sentence. Consistent with expectations, younger adults displayed an inconsistency effect when their memory for the behaviors was later tested, whereas older adults did not. Importantly, these age differences could be traced, in part, to encoding behaviors, as reflected in the participant–produced continuations. Similar to Hastie (1984), we found that participants were more likely to produce continuations that attempted to explain the behavior when this behavior was inconsistent with the overall target impression than when it was consistent. In addition, the production of explanations was associated with better recall. We also found that older adults produced fewer explanations than did younger adults, suggesting they were less likely to engage in integrative processing. Importantly, however, integrative processing facilitated older adults’ recall in a manner similar to that of younger adults. Thus, the age differences in the inconsistency effect in behavior recall could be directly tied to older adults being less likely to engage in attempts to resolve inconsistencies.

INITIAL IMPLICATIONS

The results from these two studies suggested several things. First, in spite of normative declines in processing resources associated with aging, older adults can engage in the type of processing necessary to support the construction of social representations. Sec-
ond, there appear to be age differences in the circumstances determining when individuals engage in such processing, suggesting that simple impression incongruency is not always sufficient to induce elaborative processing, even when resources are available. We hypothesized that this age–related variability could reflect at least two different factors, both of which can be conceived of within an adaptive functioning framework. First, normative shifts in goals associated with changes in the social context of aging (Carstensen, 1993) or in the resources and abilities underlying functioning (e.g., Baltes, 2003) might influence the motivation to engage in resource–demanding processing. Second, the variation in processing might also reflect age differences in the interpretation of information. Older adults’ more extensive experience in the interpersonal realm might result in the development of naive theories of the social world, which are then used in interpreting the behaviors of others. Similarly, judgments may be based in past experiences in similar situations, requiring less extensive processing. In this regard, it is interesting that Hess and Tate (1991) observed no age differences in impression judgments in spite of the observed variations in memory for behavioral information.

Our subsequent research has focused on these two potential explanations within a broader framework of age–related adaptive social cognitive functioning described earlier. In the next two sections, we highlight research findings relevant to each.

**AGE–RELATED SELECTIVITY**

Many theories of social cognition have a motivational component built into them. For example, theories of impression formation (e.g., Fiske et al., 1999) and attitude change (e.g., Chen & Chaiken, 1999) assume that the motivation to engage in resource–demanding elaborative processing (e.g., individuation, systematic) is contingent upon the goals of the processor. Such goals are often bound up in social relationships. Thus, for example, younger adults spend more time thinking about another person if that individual is a potential social partner rather than just a passing acquaintance. Such situational variation would also be expected in older adults. A developmental perspective, however, results in an
additional level of potentially influential chronic goals associated with life stage—as proposed, for example, in socioemotional selectivity theory (Carstensen, 1993)—added to the mix. These chronic goals may interact with situational goals, providing a potentially powerful framework for understanding the operation of social cognitive mechanisms across adulthood.

Of interest in our research has been another way of thinking about the relation between aging and goals that is based in changing personal resources, broadly defined. A major component of current theorizing in adult development relates to selectivity in processing, where it has been argued that there is a general shift in resource allocation from promoting growth to maintenance and loss prevention (e.g., Baltes, 2003; Brandstädter & Greve, 1994; Heckhausen & Schulz, 1995). We have argued that one result of this developmental process is a general shift toward greater selectivity in cognitive resource engagement with increasing age as older adults conserve resources by becoming more judicious in their use (e.g., Hess, Rosenberg, & Waters, 2001). One way in which such a trend is manifested is in terms of the personal relevance or meaningfulness of a situation being a stronger determinant of older adults’ performance than it is of younger adults.

STUDIES OF IMPRESSION FORMATION

An initial study by Hess, Follett, and McGee (1998) examined this issue using an impression formation task. For each target description, young and older adults were told either to form an impression of the target or to assess the suitability of the target for a particular job in their community (e.g., a policeman patrolling their neighborhood). We hypothesized that the latter would result in greater task engagement, which in turn would have a disproportionately strong impact on older adults’ performance. Consistent with expectations, we replicated the Age × Consistency interaction for behavior recall obtained by Hess and Tate (1991) with standard impression formation instructions. In contrast, judging the target’s job suitability resulted in both young and older adults exhibiting significant recall advantages for in-
consistent over consistent information. Interestingly, age differences in the inconsistency effect with impression formation instructions disappeared when participants were required to focus on inconsistent behaviors. This again suggests that part of older adults’ failure to extensively process inconsistent information reflects processing styles or preferences rather than ability.

Hess et al. (2001) further examined aging–related selectivity using an impression formation task by varying the personal relevance of the target as well as the extent to which participants were held accountable for their responses. Adults aged from 20 to 83 years listened either to a younger adult describe his experiences in his first occupational position or to an older adult describing his experiences in finding retirement housing. In both cases, the descriptions contained common behavioral information with the main distinction being the age of the actor and the context in which it was presented. We assumed that personal relevance of these two target descriptions would interact with participant age, with relevance resulting in a general increase in task engagement and the effect of relevance being stronger for older than for younger adults. Whether or not participants were held publicly accountable for their judgments was also manipulated.

Two findings were of particular interest for the present perspective. First, accountability influenced the magnitude of age differences in recall of consistent versus inconsistent behaviors. The youngest adults in the sample recalled significantly more inconsistent than consistent behaviors regardless of accountability whereas the older adults only exhibited this inconsistency effect in the high accountability condition. Second, age differences in the specificity of trait attributions were moderated by personal relevance. Younger adults made trait attributions based primarily on the implications of specific behaviors rather than the overall evaluation of the target, regardless of age–based relevance of the target. Older adults also exhibited this same effect for the personally relevant (i.e., older) target. In contrast, their trait ratings for the young target were based more on their consistency with the overall evaluation of the target rather than the presence of behavioral referents. Thus, as expected, the impact of two motivational variables varied across adulthood, with selectivity in the
engagement of cognitive resources—as reflected in elaborative processing—increasing with age.

STUDIES OF ATTITUDE CONSTRUCTION

A recent set of studies (Hess, Germain, Rosenberg, Leclerc, & Hodges, 2005) built upon these basic findings by examining the degree to which older adults were able to ignore irrelevant but easily processed affective information in constructing attitudes. Previous research (Hess, Waters, & Bolstad, 2000) had shown that older adults’ evaluative judgments of meaningless stimuli were more likely than those of younger adults to be influenced by irrelevant affective primes, perhaps reflecting aging–related declines in executive functioning and associated reductions in the ability to control the impact of such information. It may be, however, that the differences also reflected selective resource engagement. To examine this possibility, Hess et al. (2005, Experiment 2) employed a procedure similar to that of Petty, Wegener, and White (1998). Specifically, younger (22 – 46 years) and older (61 – 82 years) adults read about fictitious pieces of proposed legislation in the state of North Carolina, each of which was preceded by a description of the lawmaker who proposed the legislation. In some cases, the lawmaker was characterized in positive terms (e.g., he believed that North Carolinians had a strong sense of civic duty), whereas in other cases he was depicted in relatively negative terms (e.g., he believed the only way to get North Carolinians to deal with problems was to force them). In addition, half of the proposed pieces of legislation would have a direct impact on participants (e.g., the proposed law would result in a tax increase), whereas the other half (i.e., low relevance condition) would have minimal impact on the finances of citizens.

Consistent with our previous findings (Hess et al., 2001), we found that the older adults’ performance was more influenced by personal relevance than was that of the younger adults. Specifically, older adults’ attitudes were influenced by the likability of the lawmaker in the low relevance condition, but were unaffected in the high relevance condition. In contrast, this irrelevant affective information had little impact on younger adults’ judgments.
in either condition. If it is once again assumed that relevance is associated with task and resource engagement, these data are consistent with an aging-related increase in selectivity by demonstrating that older adults’ motivation is more affected by task relevance than is that of younger adults. This interpretation is further supported by evidence that the valence of older adults’ thoughts was associated with the lawmaker’s likability in the low relevance condition, but not in the high relevance condition. This suggests that older adults’ thinking was directed by relatively easily accessed information when unengaged, reflecting a type of heuristic processing. The fact that their attitudes were independent of their likability of the lawmaker when message relevance was high further suggests that this heuristic processing is not necessarily reflective of reductions in skills or resources, but rather reflects selective engagement in the task.

Collectively, these findings demonstrate the utility of studying cognitive functioning from a social cognitive perspective. They highlight the fact that age differences in resource-demanding social judgment processes are not simply due to variations in underlying cognitive resources, but instead appear to reflect shifting goals associated with the engagement of such resources. The bases for this shift are still in question, but we have hypothesized that it may reflect the costs associated with engaging in effortful processing and attempts by older adults to conserve energy. Some support for this conjecture can be seen in findings indicating a linkage between resources and intrinsic motivational factors. For example, Hess (2001) found that poorer health and reduced cognitive resources were associated with high personal need for structure, which in turn was associated with low levels of engagement in social and cognitive activities. Interestingly, this linkage appears to increase in strength with age (Hess et al., 2005; Hess et al., 2000). This suggests that the factors underlying individual differences in intrinsic goals may shift with development, with there being a more direct relationship between resources—broadly defined—and motivation in later life than earlier in adulthood. This further suggests that, once again, studies that focus just on young adulthood may not capture the complexity of social cognitive functioning across adulthood.
Adaptive functioning can also be seen in other normative aspects of behavior in adulthood. For example, individuals participate in a variety of social contexts as they move across the lifespan, from which they gain knowledge of optimal modes of action as well as of cultural beliefs regarding social functioning. The acquisition and use of this information in social contexts might result in a form of social expertise that reflects accumulated knowledge regarding the bases of social behavior. Specifically, consistent with general ideas regarding the development of expertise, social experience may result in the acquisition of a rich database of information about the social world (i.e., declarative knowledge) which then leads to the development of powerful operations or strategies that utilize this knowledge (i.e., procedural knowledge).

Characteristics of such expertise can be seen in impression judgments, which essentially represent our actions as naive personality or social theorists. Individual differences in judgments could be based in the availability of a database of relevant experience along with the rules and strategies that evolved from this experience. At a more advanced level, expertise is not just reflected in the development of procedural knowledge tied to specific circumstances, but also the refinement of these procedures to reflect advanced states of knowledge as well as an understanding of the appropriate circumstances for their application. Social expertise of this type is highly specific with respect to individuals and cultures. Thus, for example, individuals may develop knowledge and rules for interpreting the social world that are adaptive in the sense that they are relevant to their life context. This seems to be consistent with the previously mentioned variations in scripts and stereotypes that reflect age–specific contexts and experiences. At a more general level, expertise may also be thought of as shared knowledge that reflects culturally based beliefs and that can be viewed as adaptive in that it facilitates understanding of and interaction with others in one’s culture. Such knowledge should be adaptive at all stages of life, but may become increasingly refined with age as individuals accumulate social
experience through participation in their culture at a variety of levels.

Note that this perspective of social expertise is strongly based in knowledge, or what might be thought of as crystallized or pragmatic intelligence (e.g., Staudinger & Pasupathi, 2000). An alternative way to think about potential variability across individuals is in terms of complexity of thought. Thus, some individuals may create relatively complex representations of individuals as they take into account myriad aspects of the person and situation. Complexity may not necessarily overlap with adaptive thought, however; one may consider multiple attributes, but do so when it is unnecessary or interpret them in inappropriate ways.

The expertise perspective has been used in the study of adult development by researchers interested in the construct of wisdom. For example, Baltes and colleagues (e.g., Baltes & Smith, 1990) characterized wisdom as expert knowledge concerning the fundamental pragmatics of life. Wise individuals are viewed as possessing rich factual and procedural knowledge about everyday life, including an understanding regarding the context-specific, relative, and uncertain nature of life and strategies for dealing with problems encountered therein. Importantly, wise people are judged to be so within cultures, reflecting their understanding of the culture and rules of operation. In addition, wisdom is also hypothesized to be associated with relevant experience. Thus, for example, individuals who have received focused experience or training in dealing with life problems (e.g., clinical psychologists) are more likely to exhibit wise behavior than similarly aged individuals who have not received such experience (Smith, Staudinger, & Baltes, 1994; Staudinger, Smith, & Baltes, 1992).

This characterization of wisdom helped shape our approach to examining social expertise. The primary distinction is that the expertise we have studied might be a more common part of the culture, and thus more likely to be displayed by a majority of individuals. Thus, its development could be thought of in somewhat more normative terms, but still context specific. The judgment processes examined by us might also be somewhat simpler than those examined in studies of wisdom, and thus might be less influenced by age-related reductions in cognitive resources.
Our understanding of the development of social expertise also grew out of studies initially intended to examine the consequences of age–related reductions in cognitive resources. For example, Hess and Pullen (1994, Experiments 2 & 3) had younger and older adults form impressions of target individuals characterized in primarily positive or negative terms. After providing impression ratings, additional behavioral information was provided about the target, half of which was inconsistent with the original information. Participants once again provided impression ratings and then recalled this new behavioral information. We were interested in seeing if older adults' initial impressions were more resistant to change due to potential problems in integrating new information with existing representations.

In general, the amount of impression change observed was dependent upon the nature of the initial information about the target. Those who read positive descriptions changed more in response to additional negative information than those who read negative descriptions did in response to additional positive information. Interestingly, this effect was greater for older than for younger adults. Of further interest was the fact that the consistency of the new behavioral information with the initial description was the primary determinant of recall for younger adults (i.e., inconsistent > consistent). In contrast, older adults exhibited high levels of recall for negative information, regardless of its consistency with the initial target characterization.

This pattern of results suggested that participants weighted negative information more than positive information in forming judgments, and that this effect increased with age. At first blush, several explanations seemed possible for this interaction. For example, relative to younger adults, older adults believe that changes in negative traits are less under their control than changes in positive traits (Heckhausen & Baltes, 1991). This, in turn, could account for the age–related increase in the weighting of negative information. Alternatively, the age–related increase in focus on negative behaviors could also be associated with developmental changes in the importance assigned to affective information in social settings, as suggested by Isaacowitz, Charles,
and Carstensen (2000). Monitoring of negative information may be particularly important for older adults as they attempt to control or avoid such information in order to maintain positive affect.

Our interpretation of the Hess and Pullen (1994) data is based on the differential information value associated with positive and negative information when judging others. The general pattern of performance observed in this study was similar to that observed elsewhere (e.g., Reeder & Coovert, 1986; Skowronski & Carlston, 1987, 1992), where negative information was found to have an undue impact on judgments about morality. One interpretation is that this weighting reflects the operation of implicational schemas (Reeder & Brewer, 1989) relating to implicit theories that observers hold regarding the relationship between behaviors and dispositions. Within our culture, Reeder and Coovert (1986) suggested that there is the belief that moral persons rarely engage in immoral behavior, whereas immoral individuals will engage in both moral and immoral behavior. Thus, in identifying the morality of an individual, immoral behavior is more informative.

Skowronski and Carlston (1989) extended this notion and argued that positive and negative behavioral information varies in its diagnostic value with respect to specific trait categories. For example, assume we have two individuals, one of whom performs an honest act and one who performs a dishonest act. People are more confident in judging the latter person to be dishonest than they are in judging the former to be honest, a pattern consistent with the implicational schema notion of Reeder and Brewer (1979). Skowronski and Carlston argued, however, that this perceived trait–diagnosticity of behavioral information can be understood in part due to the availability of alternative explanations for behavior. Fewer alternative explanations exist for dishonest behaviors (“only dishonest people do dishonest things”) than for honest behaviors (“even dishonest people do honest things occasionally”). Importantly, positive information is more diagnostic in the competence domain, where there are fewer alternative explanations for competent than for incompetent behaviors.

These views regarding the differential diagnosticity of positive and negative behaviors across trait domains appear to reflect cultural norms or belief systems. That is, there is no reason to believe
that this pattern of social inference reflects universal laws governing the behavior of individuals. Rather, it most likely reflects a naive system of beliefs in our culture regarding the relationships between behaviors and underlying dispositions. One hypothesis that could then be advanced regarding the age differences observed by Hess and Pullen (1994) is they reflected an age-related increase in the weighting of trait-diagnostic behavioral information in making social inferences. Given the culture-specific basis for this effect, it can be further argued that this represents an adaptive developmental process reflecting the acquisition and use of culturally shared belief systems.

We followed up with a set of studies (Hess et al., 1999) designed to examine whether the observed age effects were truly reflective of age differences in the use of trait-diagnostic information. We essentially replicated the methodology of Hess and Pullen (1994), but included behavioral descriptions that related exclusively to either competence (e.g., intelligence) or morality (e.g., honesty). An additional notable aspect of this study was that middle-aged adults were also tested, thereby providing more information about the developmental trajectory associated with performance. The results of this study supported our hypothesis that age is differentially associated with use of trait-diagnostic information. Young adults (ages 17 – 32) changed their impressions of the target in a similar fashion regardless of the trait-diagnosticity of the initial information. In contrast, middle-aged (ages 35 – 58) adults exhibited patterns of performance suggestive of attention to diagnostic information. Specifically, impressions were less likely to change when positive competence descriptions were followed by negative competence-related behaviors than when negative competence descriptions were followed by positive behaviors. The opposite pattern of results was obtained for descriptions dealing with morality. Older (ages 60 – 80) adults’ impressions were also influenced by the trait-diagnosticity of the behavioral information, but the effect was only significant for the morality domain.

These results suggest that increasing age is associated with increased weighting of trait-diagnostic information in making social inferences, with those individuals in mid-life being most likely to use this information. If we infer that this represents the
development of expert knowledge, these findings are not inconsis-
tent with other research that suggests that midlife is associated
with optimal levels of functioning (e.g., Labouvie–Vief, Chiodo,
Goguen, Diehl, & Orwoll, 1995), perhaps reflecting limiting fac-
tors associated with reductions in cognitive resources in later life.
It is also important to note, however, that the observed age effects
were not mediated by basic cognitive skills (e.g., working mem-
ory, processing speed). This suggests that these effects were
based in factors other than ability.

For present purposes, the results of these two initial pieces of re-
search are also interesting in that they seem to contradict findings
in the mainstream social cognition literature (Skowronski &
Carlston, 1987, 1992) regarding the impact of trait diagnosticity
on younger adults’ social judgments. An investigation of the rea-
sons for this discrepancy as well as the observed age differences
could provide valuable information regarding the factors influ-
encing performance. In addition, assuming a developmental per-
pective in the study of these processes might further highlight
the adaptive nature of such judgments and their important role in
functioning.

Importantly, the relative absence of diagnosticity effects in the
younger adults in the Hess et al. research could not be accounted
for by between–group differences perceptions of the trait–diag-
nostic value of individual behaviors used in their study. Young
(18 – 35), middle–aged (41–59) and older (62 – 85) adults all per-
ceived the diagnosticity of specific behaviors in the expected
manner, with minimal age differences. This is an interesting find-
ing and, when taken with data from Skowronski and Carlston
(1987), suggests that younger adults do have an understanding of
trait–diagnosticity. The question then remains why it does not in-
fluence their impression judgments to the same degree as
observed in middle–aged and older adults.

One possibility is that these judgments of individual behaviors
reflect declarative knowledge, but that the incorporation of
trait–diagnostic information in making impression judgments
might be more reflective of procedural knowledge. An analogy
might be made here with chess. For example, declarative knowl-
edge relating to the rules of the game and the possible movements
with individual pieces is prerequisite, but not sufficient for the de-
development of expertise. Expert behavior is exhibited in recognition of appropriate circumstances under which the knowledge is to be applied and in the development of specific behavioral strategies that incorporate this knowledge. With respect to knowledge relating to trait diagnosticity, middle-aged and older adults may share declarative knowledge with younger adults, but the former two groups have developed more powerful procedural knowledge associated with its application. I return to this point later.

AGE DIFFERENCES IN SOCIAL INFERENCES: THE INFLUENCE OF EXPERTISE?

In subsequent research, we explored this expertise–based explanation for the observed age effects. Hess and Auman (2001) attempted to replicate the findings of Hess et al. (1999) using a somewhat simpler procedure. In their first study, adults aged from 20 to 84 read brief target descriptions composed of two positive and two negative behaviors reflective of either competence or morality, and then provided impression ratings on the relevant trait dimensions. It was found that the variability in ratings increased with age. That is, in young adulthood, there was much more overlap in the ratings across the competence and morality domains than there was in later adulthood. With increasing age, the distinction between ratings across these two domains increased, with positive trait attributions being more likely for competence–related target descriptions and negative attributions more likely for those in the morality domain. In other words, ratings became increasingly reflective of the trait–diagnosticity of the behavioral information with increasing age.

In this same study, participants also rated the importance they attached to traits within the competence and morality domains, which in turn affected attention to related trait–diagnostic cues. Regardless of age, Hess and Auman found that those who attributed high importance to traits within a particular domain were also more likely to attend to trait–diagnostic cues in that domain. Importantly, value placed on a domain did not account for any age–related variability in performance. This suggests that the ob-
served age differences in social inferences do not just reflect the developmental salience of underlying social goals.

A second study by Hess and Auman replicated the first and produced two additional observations. First, the age differences in trait ratings were not strongly reflected at the process level. Study times collected for individual behaviors within descriptions revealed a general tendency toward spending more time reading trait–diagnostic behaviors than nondiagnostic behaviors. There was also some evidence that this differential allocation of processing to behaviors based on diagnosticity increased with age, but the trend was only significant for competence behaviors. This suggests, once again, that there may be minimal age differences in the perceptions of the diagnosticity of individual pieces of behavior. Thus, the age effects observed in trait ratings may be more reflective of procedural knowledge associated with the application of information regarding diagnosticity rather than an understanding of this construct.

The possibility that age differences in ratings might reflect in–group/out–group processes associated with dispositional inferences was also investigated. Trait–diagnostic inferences could be conceived of as a type of dispositional attribution, which is more prevalent for out–group members (e.g., Hewstone, 1989) due to perceivers being less likely to engage resource–demanding corrective mechanisms. Consistent with this possibility, Wojciszke (1994) demonstrated that the weighting of trait–diagnostic cues in making judgments is stronger if the participant assumes the role of an observer rather than an actor. If targets in previous studies were perceived as younger adults, then the observed age differences in the weighting of trait–diagnostic information may simply reflect age differences in perceptions of in–group/out–group status. Contrary to this hypothesis, however, Hess and Auman (2001) found that age of target did not interact with age of participant.

Thus far, these findings are all consistent with an expertise–based explanation. The results of two final studies reinforce and refine this interpretation. Leclerc and Hess (in press) examined whether age differences in the impact of trait–diagnostic cues on social judgments might reflect variations in the accessibility or perceived applicability of relevant declarative knowledge.
Previous findings suggest that adults of all ages possess similar levels of declarative knowledge regarding trait–diagnosticity (e.g., Hess et al., 1999; Skowronski & Carlston, 1987). Leclerc and Hess (in press) hypothesized that the observed age differences on judgment tasks may reflect more direct linkages between this knowledge and relevant situational cues in those with more expert knowledge. Those with less expertise may require more salient cues for the activation and application of trait–diagnostic knowledge. Some evidence in support of this idea can be seen in Skowronski and Carlston’s (1991) finding that the impact of trait diagnosticity in younger adults was greatest with extreme cues; with relatively weak cues, evaluative consistency appeared to be a stronger influence on trait inferences.

To test this idea, Leclerc and Hess (2004) presented young (17 – 39), middle–aged (40 – 58), and older (61 – 78) adults with brief target descriptions relating to either competence or morality. Saliency of trait–diagnostic cues was manipulated by varying either the number of cues (1 vs. 3 behaviors) or the extremity of the cues (moderate vs. extreme trait exemplars). It was hypothesized that the judgments of non–experts (i.e., young adults) would be more affected by cue salience than those with more expertise (i.e., middle–aged and older adults). The results were generally consistent with expectations. Trait–diagnosticity had a stronger impact on impression judgments as cue salience increased, and this effect was particularly evident in the young adult group; adults in the two older groups were likely to highly weight diagnosticity in their judgments regardless of cue salience, suggesting that linkages between behavioral cues and expert knowledge was relatively strong.

It is interesting that this variation in the weighting of trait–diagnostic information was independent of the influence of another behavioral cue. Specifically, participants in all age groups exhibited similar responses to behavioral extremity, with trait ratings to extreme behaviors being more negative than those to targets displaying moderate behaviors. Wojciszke, Brycz, and Borkenau (1993) hypothesized that this effect reflects approach–avoidance tendencies in social situations, whereby people tend to avoid individuals displaying extreme behaviors, regardless of their content (e.g., positive versus negative). This has been conceived of as
a protective device, and thus can be thought of as a relatively basic social response. The fact that social judgments across age groups were affected differently by trait–diagnostic cues and their salience than by behavioral extremity suggests a different basis for the impact of these two types of information. The finding that the former are moderated by age in adulthood suggests an experiential basis, further reinforcing an expertise viewpoint. These findings also reinforce the importance of taking a developmental perspective in understanding social cognition in that two factors (trait–diagnosticity and extremity of behaviors) that might be simply considered as two of many variables in models of social inference actually appear to have quite different functions and developmental bases.

In a final study, Hess, Osowski, and Leclerc (2005) examined two additional aspects of the expertise hypothesis. One characteristic of experts is that they not only possess relevant declarative and procedural knowledge, but that such knowledge becomes more refined with experience. This refinement may be displayed in terms of their sensitivity to subtle context cues that influence the appropriate application of knowledge. Past research has suggested that older adults are often more reliant than younger adults on schematic knowledge structures to support processing (see Hess 1990, 2005), perhaps leading to the inference that the age–related increase in trait–diagnostic inferences simply reflects rigid application of relevant schematic knowledge by older adults as a means of compensating for reductions in cognitive skills. Some evidence against this explanation can be found in the fact that the previously observed age trends are not associated with indices of basic cognitive resources (e.g., as working memory).

Hess et al. (2005) attempted to obtain more specific evidence relevant to this issue by examining the degree to which the interpretation of the descriptive content of behavioral information was moderated by the context in which it occurred. Specifically, adults ranging in age from 23 to 86 were once again asked to make judgments about targets based on minimal behavioral information relating either to morality or competence. To examine sensitivity to context in social inference processes, the target descriptions also varied in terms of the implications of the behav-
iors contained in them. Wojciszke (1997) observed that behaviors that have primary implications for others (i.e., other–profitable)–regardless of descriptive content–are interpreted in terms of morality–based traits. In contrast, behaviors with primary implications for self (i.e., self–profitable) are interpreted in terms of competence. We reasoned that if older adults are simply applying trait–diagnostic schemas in relatively rigid manner in response to the descriptive content of target behaviors, then their judgments should not be sensitive to whether the behaviors had implications for self or other. Thus, for example, a dishonest behavior would be given the same weighting regardless of whether it was directed at self (e.g., cheating at solitaire) or at others (e.g., cheating at Monopoly). In contrast, if older adults are truly experts, their social judgments should be sensitive to both the descriptive and implicational cues.

Consistent with the expertise perspective, increasing age was associated with increased sensitivity to both the descriptive content of the targets’ behaviors and the focus of the behaviors. This sensitivity was also evident in the bases for the overall evaluations displayed by middle–aged and older adults. When the descriptive and focus trait implications of the behaviors were at odds (e.g., honesty–related behaviors directed at self), likability ratings were shown to be determined in part by both competence and morality ratings. In contrast, younger adults tended to be rather unidimensional in the basis for their likability responses, with morality ratings being the primary determinants of likability responses regardless of context.

Hess et al. (2005) also found that social experience moderated age differences in the use of trait–diagnostic information. For example, younger adults with higher levels of self–reported social experience weighted trait–diagnostic information in a manner similar to middle–aged and older adults when making morality judgments. This suggests that extensive experience in the social domain can result in similar levels of expertise to that associated with cumulative experience over a lifetime, a finding consistent with the expertise perspective and with other work on social expertise. Interestingly, complexity of reasoning processes—as reflected by attributional complexity, openness to experience, and self–monitoring—was not associated with sensitivity to diagnos-
tic information. From an expertise basis, however, this makes perfect sense in that it is not simply the complexity of thought that influences trait–diagnostic judgments, but the knowledge of what to attend to and how to interpret it. Such information would be more likely to be based on experience in the social domain.

CONCLUSIONS AND LIMITATIONS

The research examined in this section extends previous work on social inferences with younger adults by placing the study of such processes within a developmental–adaptive framework. This research is important in that it demonstrates that findings from studies using only younger adults are limited in their scope. Whereas such studies are important in illustrating the basic mechanisms underlying social cognitive phenomenon, their reliance on individuals from a single age group limits their ability to fully account for factors associated with these phenomenon. By adopting a developmental framework, we have illustrated how social inference processes vary across adulthood and how these variations may reflect adaptive functioning.

Obviously, there are limitations to our studies (e.g., the scope of processes investigated is somewhat limited) as well as questions that still need to be addressed. For example, if social experience is associated with expertise, why do older adults occasionally perform at lower levels than middle-aged adults? One possibility is that reductions in basic cognitive resources or the mechanics of cognition may limit the ability of older adults to use their knowledge, particularly in complex situations. This may account for the apparent discrepancy between our studies of expertise and those examining selectivity. For example, the finding by Hess et al. (2001) that older adults were less likely than younger adults to make inferences based on the trait implications of behaviors seems to contradict the age–related expertise view. This finding may, however, be accounted for by the relatively complex materials—and associated cognitive demands—used in the Hess et al. study. Importantly, when personal relevance was high, older adults did incorporate behavior-specific information in their judgments.
Research on age differences in attribution processes is also relevant here. In this research, old age has been associated with lower or seemingly inconsistent patterns of responses when compared with older adults (e.g., Blanchard–Fields, 1994; Follett & Hess, 2002). This in part may be accounted for by the complexity of the stimuli used in this research. These studies often use stimuli that contain cues associated with dispositional versus situational attributions, but they are embedded within relatively complex scenarios. This may result in older adults interpreting the scenarios not only in terms of these cues, but also past experiences with relevant situations (e.g., Blanchard–Fields et al., 1998), thereby accounting for the seeming inconsistency in their responses (i.e., high levels of dispositional and interactive attributions). This further reinforces the value of examining social inferences within a developmental framework. Doing so results in an understanding of both the variations in the nature and complexity of these processes across the lifespan as well as potential changes in their meaning (e.g., a dispositional inference may not have the same meaning in young and old adulthood). Once again, the point here is that exclusive focus on younger adults may affect our understanding by limiting the contexts in which we observe behavior and the factors that influence behavior.

GENERAL CONCLUSIONS

The research presented here has examined adaptive functioning during adulthood from a social cognitive perspective. Based upon ideas derived from the study of adult development and of social cognitive functioning, we have demonstrated how experience and selective engagement might operate to maintain effective levels of functioning in later adulthood. In addition to the theoretical contributions of this research, implications might also be drawn regarding the advantages of examining social cognitive functioning across adulthood with respect to our understanding of both adult development and social cognition.
IMPLICATIONS FOR THE STUDY OF ADULT DEVELOPMENT AND AGING

Assuming a social cognitive perspective in studying everyday cognitive functioning enriches our general understanding of adult age differences therein by placing such functioning within an everyday context and broadening our perspective of the factors that might be operative in determining behavior. In doing so, the emphasis shifts from a relatively narrow focus on basic cognitive processes to one that examines these processes in the broader context of the individual’s life (see also Blanchard–Fields & Hess, 1999; Hess, 2005). In our research, we have consistently demonstrated that the consideration of goals, motivation, and experience are essential in understanding age differences in how people process information in social contexts. Failure to consider the effects of such factors may result in an inaccurate picture of older adults’ capabilities. For example, research that examines cognition in a fairly simplistic manner without considering age–related variations in processing goals and experience may result in inferences about aging that are not representative of actual functioning. It is in this regard that theories and models of social cognition can contribute to our understanding of aging by illustrating the specific ways in which basic cognitive mechanisms interact with factors such as goals, motivation, and affect. This emphasis on the “hot” aspects of cognition is something that has been widely neglected in the cognitive aging literature. Recent investigations by many different researchers, however, are beginning to demonstrate that such factors play important roles in determining how different–aged adults process information in a variety of contexts.

IMPLICATIONS FOR THE STUDY OF SOCIAL COGNITION

Likewise, it can be argued that research on social cognitive functioning across adulthood can contribute to our understanding of social cognition in general. The scientific concerns associated with the generalizability of models and theories developed primarily on the observations of young adults have already been
mentioned. In addition to this and to issues raised by the other papers in this special issue, our research has highlighted two potential advantages of studying social cognition across adulthood. The first has to do with age differences in goals and the life circumstances associated with them. As already noted, goals are an important component of most models of social cognitive functioning. Their treatment within the context of young adulthood, however, necessarily limits the observations that can be made regarding their variety and relationship to development. Consideration of the developmentally based adaptive nature of goals in responses to life circumstances adds a layer of richness to our understanding of goals and the contexts in which they develop that cannot be attained through observations on a relatively homogenous group of individuals.

The second potential contribution of our research has to do with examining the impact of presumed experience and its role in the development of social cognition. The studies of social expertise discussed here highlight the fine–tuning of social inference processes that may accompany development in adulthood. Examination of social inferences in relation to age in adulthood has illustrated potential mechanisms that may underlie the development and use of specific types of social knowledge, as well as provided a framework of characterizing development. Comparisons of performance on younger and older adults in our studies, as well as contrasts between our findings and those of researchers testing only younger adults have illustrated that studies focused solely on a relatively limited age span in adulthood may not provide a complete picture of the nature of social cognitive functioning and the important aspects of such functioning.

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